WONDERS OF SCIENCE IN PICTURES!

SCIENCE COMICS

10¢

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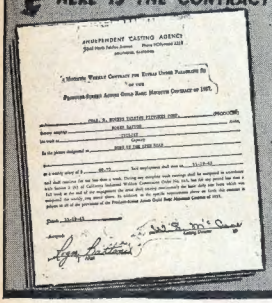
No. 5

ODDITIES ABOUT THE GREAT APES
THE STORY OF THE WORLD'S BRIDGES
THE AMAZING DISCOVERY OF PULP WOOD PAPER
PULP
THE MIRACLES OF GEORGE WESTINGHOUSE
FLIGHT BY FIRE

BOYS AND GIRLS! HERE'S HOW I LANDED A MOVIE CONTRACT

"Ever since I can remember," says Roger Batton of Brownwood, Texas, "my ambition was to be a movie star. Now, thanks to Judith Allen's book, HOW TO GET INTO THE MOVIES, I have signed a contract with Monogram Pictures for a swell part in the Charles Roger's production, SONG OF THE OPEN ROAD."

HERE IS THE CONTRACT



INDEPENDENT CASTING AGENCY

WARNER BROS. PICTURES Inc. EMPLOYEES' STATEMENT

WARNER BROS. PICTURES, INC.

WHAT THE PAPERS SAY

Roger Batton Is In Florida For Filming Of Hollywood Picture

Roger Batton, son of Mr. and Mrs. R. E. Batton, 2207 Avenue D, who is now in Hollywood under

ROGER'S 'THANK YOU' TO JUDITH

Dear Judith,

I want to thank you for the wonderful assistance your book was in helping land my contract with one of the major studios.

A copy of this detailed book is something that a 'screen hopeful,' extra or bit player should not be without.

Thank you so much for telling us, "How to get into the Movies."

Roger Batton

Roger Batton

WANTED! *Boys and Girls for the Movies!*

There are plenty of opportunities in Hollywood, but you must know how to take advantage of them.

Let Judith Allen, star of 52 pictures, teach you as she taught Roger Batton. Miss Allen, who has starred with Bing Crosby, Walter Pidgeon, Nelson Eddy, Gene Autry, Cecil B. DeMille, Shirley Temple, has written a book "How to Get Into the Movies." In it she teaches you many of the things you must know and do to get started in Hollywood. She teaches you methods that have been used by herself and such stars as Jean Arthur, Veronica Lake, Lana Turner, Joan Crawford, Joe E. Brown, Brian Aherne, Elizabeth Frazer and many others.

Send for Judith Allen's book today. It may land you a movie contract just as it did Roger Batton. SEND NO MONEY. Fill in coupon below and mail today to Judith Allen, 117 West 48th St., N. Y. 19, N. Y. Dept 89, When Postman delivers your book pay him $1 plus postage and C.O.D. charges. If you send cash with order, Judith Allen will pay all postage AND IN ADDITION, AUTOGRAPH YOUR COPY. Guarantee: If not pleased, return book within 5 days and get your $1 back.

MAIL COUPON NOW

Miss Judith Allen
117 W. 48th St., N. Y. 19, N. Y., Dept. 89

Dear Miss Allen: Please send me your book, "How to Get Into the Movies." I will pay the postman $1 plus postage and C.O.D. charges. It is understood that if I am not satisfied I may return the book within 5 days and get my money back.

NAME .....
(PLEASE PRINT)

ADDRESS .....

CITY ..... STATE .....

☐ Check here if you enclose $1 to save all postage charges and have Judith Allen autograph your book. Same money-back guarantee applies. Canadian orders must be accompanied by cash or money order.

SCIENCE COMICS, Sept., 1946, Number 5. Published bi-monthly by Humor Publications, Inc. Office of Publication, 29 Worthington Street, Springfield 3, Mass. Editorial and Executive Offices, 67 West 44th Street, New York 18, N. Y. Entered as Second Class Matter at the Post Office, Springfield, Mass., October 29, 1945, under the Act of March 3, 1879. Single copies, 10c; 12 issues, $1.20. Copyright, 1946, by Humor Publications, Inc. Printed in U.S.A.

FLIGHT by FIRE
WHEN WORLD WAR II BROUGHT FORTH ROCKET AND JET PLANES, MILITARY SCIENCE HAD FINALLY PERFECTED A REVOLUTIONARY DEVICE THAT HAD ITS BEGINNINGS OVER A CENTURY BEFORE CHRIST...
BOY! THERE'S A REALLY NEW ANGLE ON FLYING!!
NOT SO FAST JACK! THOSE ROCKETS ARE ONE OF THE OLDEST DEVELOPMENTS IN THE WORLD!
EVEN THE GREEKS HAD A NAME FOR THEM ABOUT 150 B.C.!!

IN ALEXANDRIA, IN THE SECOND CENTURY B.C. ...
THE FIRE WILL CREATE STEAM IN THE CLOSED KETTLE! WHEN THE STEAM IS EXPELLED THROUGH THIS ORIFICE IT WILL CAUSE THE SPHERE TO ROTATE!
THINKS HERO HE IS DOING SOMETHING USEFUL FOR GREECE??
YOU WILL SEE! IT PERFORMS AS I HAVE SAID IT WOULD!
AYE! IT IS AS USELESS AS AN AN ARMLESS SLAVE!!
BUT WHAT GOOD CAN COME OF THIS BALL THAT TWISTS??
CENTURIES LATER THE CHINESE USED THE JET PRINCIPLE IN A GUN-POWDER PROPELLED ROCKET---
FLEE! LEST THOU BURN!
AIEEEE! THE DEVIL ARROW!!
BY MY ANCESTORS BEARD! I HAVE NEVER SEEN THE LIKE OF THIS FIRE-ARROW!!
DE FONTANA, A 15TH CENTURY ITALIAN, DESIGNED A ROCKET-CAR FOR WARFARE...
NO LONGER CAN AN ENEMY HOPE TO VANQUISH OUR NOBLE ARMIES!
SOON THE ENEMIES' IMPREGNABLE GATES WILL GO UP IN FLAME!
THE FLAME-CAR WILL PUT AN END TO WOODEN FORTIFICATIONS!! LUCKILY IT IS ON OUR SIDE!!

THERE IS NO END TO THE WAYS THE WHEELED-FIRE-WAGON CAN BE DISGUISED TO CONFUSE THE ENEMY!
ZOUNDS! AN ENGAGEMENT WON BY A LAND-TRAVELING FISH!!
VERILY! A FISH THAT STREAMS A TAIL OF FIRE!!
BY 1500 CANNON HAD SUPERSEDED THE ROCKET...
BUT NOW MAN TURNED TO DEVELOPING ROCKETS AND JETS AS POWER FOR TRANSPORTATION...
ODDS! WHAT A FEARSOME WEAPON! NOTHING CAN WITHSTAND SUCH POWER!!
AYE! THE CANNON MAKES THE ROCKET OBSOLETE AS A GALLEY BOAT
WHEN I SEAT MYSELF IN THIS CHAIR YOU WILL APPLY TORCHES TO ROCKETS!!
SUCH ROCKETS THE POWDER MERCHANT MUST HAVE OUTDONE HIMSELF ON THEIR MANUFACTURE
HAH! THE CHAIR THAT RUNS SHALL FREE MAN FROM SUCH LABORS AS WALKING!!
OWWW! A DEVIL POSSESSES THIS ACCURSED CHAIR!!

IN THE 17th CENTURY, ENGLISH PHYSICIST ISAAC NEWTON HAD BETTER LUCK...

STEAM IN THE BOILER IS EXPELLED THROUGH THAT NOZZLE WITH ENOUGH FORCE TO PUSH THE VEHICLE FORWARD!!

I SEE! AND THAT LONG LEVER CONTROLS THE VALVE REGULATING THE AMOUNT OF STEAM ALLOWED TO ESCAPE FROM THE JET!

SOME DAY MACHINES SUCH AS MINE WILL RENDER HORSES USELESS!!

WHEN MODERN SCIENTISTS STARTED WORKING WITH ROCKETS AND JETS THE BASIC PRINCIPLES REMAINED THE SAME....

THE DIFFERENCE BETWEEN ROCKETS AND JETS IS SIMPLE: THE ROCKET CARRIES BOTH ITS OWN FUEL AND OXYGEN AND THE JET CARRIES ONLY ITS OWN FUEL GETTING OXYGEN FROM THE AIR AND COMPRESSING IT BEFORE COMBINING IT WITH THE FUEL!!

JETS AND ROCKETS WERE MOSTLY A SUBJECT FOR DREAMERS UNTIL WORLD WAR II GAVE IMPETUS TO RESEARCHERS...

DADDY, WILL THERE REALLY EVER BE THINGS LIKE THAT?

LIFE IN THE 22nd CENTURY

YEAR'S MOST THRILLING MOVIE

I DOUBT IT SON! IT'S JUST SOME MORE OF THAT HOLLYWOOD FOOLISHNESS!

....BUT SCIENCE QUICKLY TOOK ROCKETS FROM THE FANTASY STAGE TO PRODUCE THE FIRST SUCCESSFUL ROCKET WEAPON OF WORLD WAR II.

BOY! HOW THIS BAZOOKA CUTS 'EM DOWN TO SIZE

THE GERMANS, AS WE KNOW, QUICKLY BUILT MULTIPLE ROCKET LAUNCHERS...
ACH! HOW CAN THOSE FOOLS EXPECT TO DEFEAT OUR FUEHRER WHEN HE GIVES US SUCH WEAPONS AS THIS NEBELWERFER!
... AND THE BRITISH USED ANTI-AIRCRAFT ROCKETS...
IN THE AIR, ROCKETS WERE DEVELOPED FOR EXTRA TAKE-OFF POWER AND FIRST USED EARLY IN 1943...
WOW! HALF THE NORMAL TAKE-OFF RUN!
YOU CAN GET ANYTHING INTO THE AIR WITH THAT JET-ASSISTED PROPULSION!
MEANWHILE SCIENTISTS LABORED OVER THE PROBLEM OF A JET MOTORED PLANE...
AT ALTITUDES OF 40,000 FEET, THE AIR IS SO THIN A PROPELLOR LOSES ITS EFFICIENCY!
A JET PROPELLED PLANE IS THE ONLY ANSWER AND I THINK THAT ENGLISHMAN WHITTLE'S WILL SOLVE OUR PROBLEM!
IN 1941 THE WHITTLE JET-ENGINE WAS PROVEN IN ENGLAND...
THE "SQUIRT" IS A REAL ANSWER TO THE NAZI LUFTWAFFE!
WITH REFINEMENTS WE'LL GET BETTER THAN 500 MILES AN HOUR OUT OF THIS JOB PLUS A CEILING ABOVE 40,000 FEET!
A WHITTLE ENGINE WAS SHIPPED TO THE UNITED STATES...
GENTLEMEN, WE'VE A BIG JOB AHEAD OF US. THE BRITISH DEVELOPED THIS ENGINE. WE'VE GOT TO BUILD A FUSELAGE AND WINGS TO FIT IT!
THAT WON'T BE TOO HARD! A CONVENTIONAL TYPE PURSUIT JOB, WITH SOME MODIFICATIONS SHOULD HANDLE IT!!

IN OCTOBER 1942 THE FIRST TESTS OF THE AMERICAN VERSION WERE RUN OFF...
THE P-39 LENT ITSELF WELL TO THIS CHANGE IN POWER!
YES, AN OLD FRIEND WITH NEW TRIMMINGS!
IT'S A SUCCESS! AS SOON AS WE SMOOTH OUT THE PERFORMANCE A LITTLE WE CAN TURN IT OVER TO THE SQUADRONS!
TOO BAD THOSE JET MOTORS ARE SO INEFFICIENT AT LOW ALTITUDES! THEY WASTE TWO-THIRDS OF THEIR FUEL!!
... BUT IT REMAINED FOR THE GERMAN V-2 A ROCKET-TYPE PROJECTILE, TO SURPASS EVEN THE SPEED OF SOUND...
ALTITUDE TESTS PROVED THE REAL WORTH OF THE NEW JET-PROPELLED AIRACOMET...
I WAS UP OVER 40,000 FEET AND STILL DIDN'T HIT HER CEILING!
IT'S SO SIMPLE TO BUILD WE CAN HAVE THE ENGINES IN PRODUCTION IN NO TIME!!
GREAT SCOTT! THAT BEATS OUR BEST PROPELLOR-DRIVEN JOBS!
THE V-1 THEY COULD CATCH WITH THEIR JET-PLANES! THIS THEY CANNOT EVEN SEE! WE WILL CRUSH LONDON YET!
NOW, WITH THE WAR OVER...
THERE'S A JET JOB! 700 MILES AN HOUR! THEY'LL BE FLYING TO THE MOON, FIRST THING YOU KNOW!
NOT SO FAST BROTHER!! THEY COULDN'T BUILD A SHIP BIG ENOUGH TO CARRY THE FUEL FOR A FLIGHT TO THE MOON. NO, THE ROCKET AND JET WILL GET US INTO THE STRATOSPHERE, BUT NOT BEYOND THAT!! NOT NOW, ANYWAY!!
?
NOT NOW, NO!!! BUT THE ATOM, WHEN FINALLY HARNESSED FOR PRODUCTION AS WELL AS DESTRUCTION, MAY WELL BE THE KEY UNLOCKING INTERPLANETARY FLIGHT!!

FACSIMILE TRANSMISSION

FACSIMILE TRANSMISSION IS THE METHOD OF SENDING PICTURES AS WELL AS WORDS EITHER OVER TELEGRAPH WIRES OR BY MEANS OF RADIO WAVES, FROM ONE POINT TO ANOTHER WHERE THE PICTURE OR WORDS ARE PICKED UP ON A RECORDING MACHINE AND REPRODUCED AS A COPY OR "FACSIMILE" OF THE ORIGINAL.

HERE IS THE BACKGROUND OF THIS INTERESTING METHOD OF MODERN COMMUNICATION.

G. ALTMAN

SCOTLAND, 1842- INVENTOR ALEXANDER BAIN'S WORKSHOP...

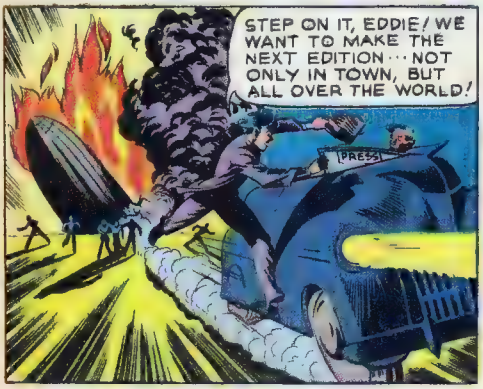
QUITE A COINCIDENCE! SAMUEL MORSE'S ELECTRIC TELEGRAPH HAS BEEN PERFECTED JUST AT THE SAME TIME I'M PERFECTING MY ELECTRICAL FACSIMILE TRANSMITTER!

The Scottish News

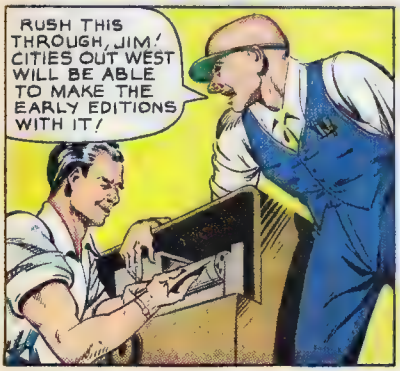
BAIN'S PLANS FOR TYPE OF FACSIMILE SYSTEM, BASED ON HIS ORIGINAL PATENT OFFICE DRAWING.

IF I'M GOING TO INVEST IN YOUR INVENTION, BAIN, I'D LIKE TO SEE JUST HOW IT WORKS!
WELL, FIRST OF ALL, THE TYPE TO BE TRANSMITTED IS SET INTO THE BED PLATE OF MY TRANSMITTER···
THE RECORDER OVER HERE··· WHICH COULD JUST AS EASILY BE HUNDREDS OF MILES AWAY HAS A SPECIAL CHEMICALLY TREATED PIECE OF PAPER INSERTED TO ITS BEDPLATE.
NOW WHEN YOU THROW THE SWITCH, NOTICE THAT THE PENDULUM IN THE TRANSMITTER SWINGS IN UNISON WITH THE PENDULUM OF THE RECORDER.
EACH TIME THE THE PENDULUM IN THE TRANSMITTER SWINGS, IT MOVES THE CONTACT POINT OF THE "SCANNER" ACROSS THE TYPE FACE. EACH TIME THE CONTACT POINT TOUCHES A PIECE OF TYPE, IT CLOSES THE ELECTRICAL CIRCUIT AND SENDS OUT IMPULSES OVER THE WIRE!
See science advance another step.
THESE IMPULSES CAUSE THE CONTACT POINT OF THE PENDULUM IN THE RECORDER TO MOVE ACROSS THE SHEET OF TREATED PAPER, DISCOLORING IT, AND THUS "WRITING" EACH LETTER OF THE TYPE FACE ON THE PAPER!

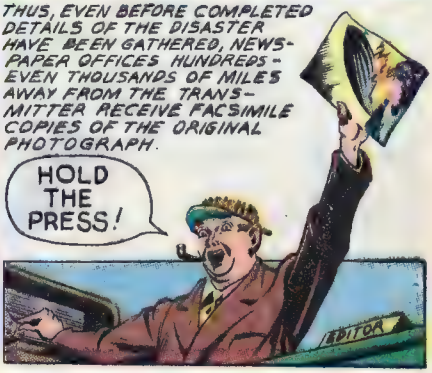
TODAY, FACSIMILE TRANSMISSION CAN SEND NEWS PICTURES AS WELL AS STORIES TO DISTANT PARTS OF THE WORLD IN A MATTER OF MINUTES. FOR EXAMPLE, WHEN THE GERMAN DIRIGIBLE HINDENBURG EXPLODED AS IT APPROACHED ITS HANGAR AT LAKEHURST, NEW JERSEY...



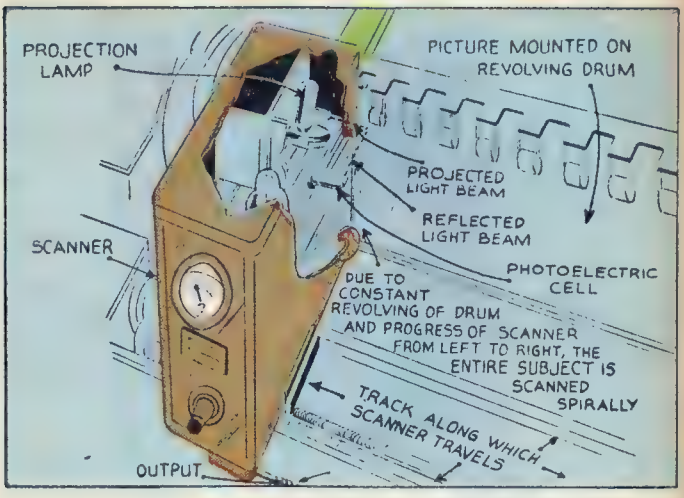
THE PHOTOGRAPHER IS RUSHED TO THE OFFICE OF THE NEWS SERVICE WHERE THE PICTURE OF THE DISASTER IS HURRIEDLY DEVELOPED AND PRINTED. THIS PHOTO IS GIVEN OVER TO THE TRANSMITTER OPERATOR.



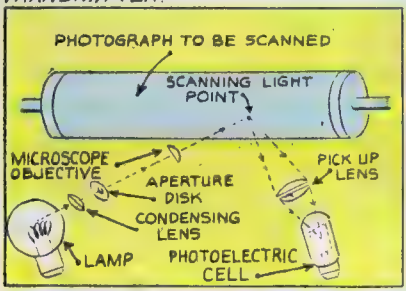
THUS, EVEN BEFORE COMPLETED DETAILS OF THE DISASTER HAVE BEEN GATHERED, NEWSPAPER OFFICES HUNDREDS - EVEN THOUSANDS OF MILES AWAY FROM THE TRANSMITTER RECEIVE FACSIMILE COPIES OF THE ORIGINAL PHOTOGRAPH.



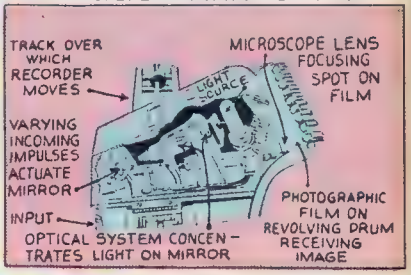
THIS IS A CUT-AWAY SECTION OF A MODERN RADIOPHOTO SCANNER. THIS MACHINE USES NO TELEGRAPH WIRES, BUT SENDS OUT THE IMAGES OF WORDS OR PICTURES BY MEANS OF RADIO WAVES

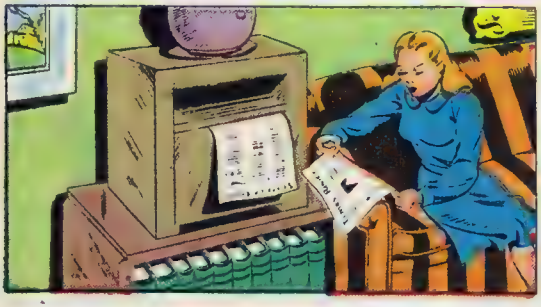

PROJECTION LAMP
PICTURE MOUNTED ON REVOLVING DRUM
PROJECTED LIGHT BEAM
REFLECTED LIGHT BEAM
SCANNER
PHOTOELECTRIC CELL
DUE TO CONSTANT REVOLVING OF DRUM AND PROGRESS OF SCANNER FROM LEFT TO RIGHT, THE ENTIRE SUBJECT IS SCANNED SPIRALLY
TRACK ALONG WHICH SCANNER TRAVELS
OUTPUT

THIS DIAGRAM SHOWS THE OPTICAL SYSTEM USED IN ONE OF THE NEWER RADIOPHOTO SCANNERS. THESE SCANNERS OPERATE MUCH IN THE SAME MANNER AS A TELEVISION BROADCAST TRANSMITTER.



THIS IS A CUT-AWAY VIEW OF THE RADIOPHOTO RECEIVER OR - MORE ACCURATELY - THE RECORDER. THE MAIN DIFFERENCE BETWEEN THIS MACHINE AND A TELEVISION RECEIVER IS THAT THE RADIOPHOTO RECORDER MAKES A PERMANENT RECORD OF THE PICTURE OR WORDS SENT TO IT.


TRACK OVER WHICH RECORDER MOVES
MICROSCOPE LENS FOCUSING SPOT ON FILM
LIGHT SOURCE
VARYING INCOMING IMPULSES ACTUATE MIRROR
INPUT
OPTICAL SYSTEM CONCENTRATES LIGHT ON MIRROR
PHOTOGRAPHIC FILM ON REVOLVING DRUM RECEIVING IMAGE



THIS IS A MODERN, STREAMLINED FACSIMILE RECORDER. IN THE FUTURE, THE AVERAGE HOME WILL EACH HAVE ONE OF THESE MACHINES WHICH WILL AUTOMATICALLY "PRINT" YOUR MORNING NEWSPAPER BRINGING NEWS INTO THE HOME IN A PERMANENT FORM ONLY A FEW MINUTES AFTER IT IS BROADCAST.

SOME *Facts* ABOUT *The* GREAT APES

GREATEST SHOW ON EARTH PRESENTS:

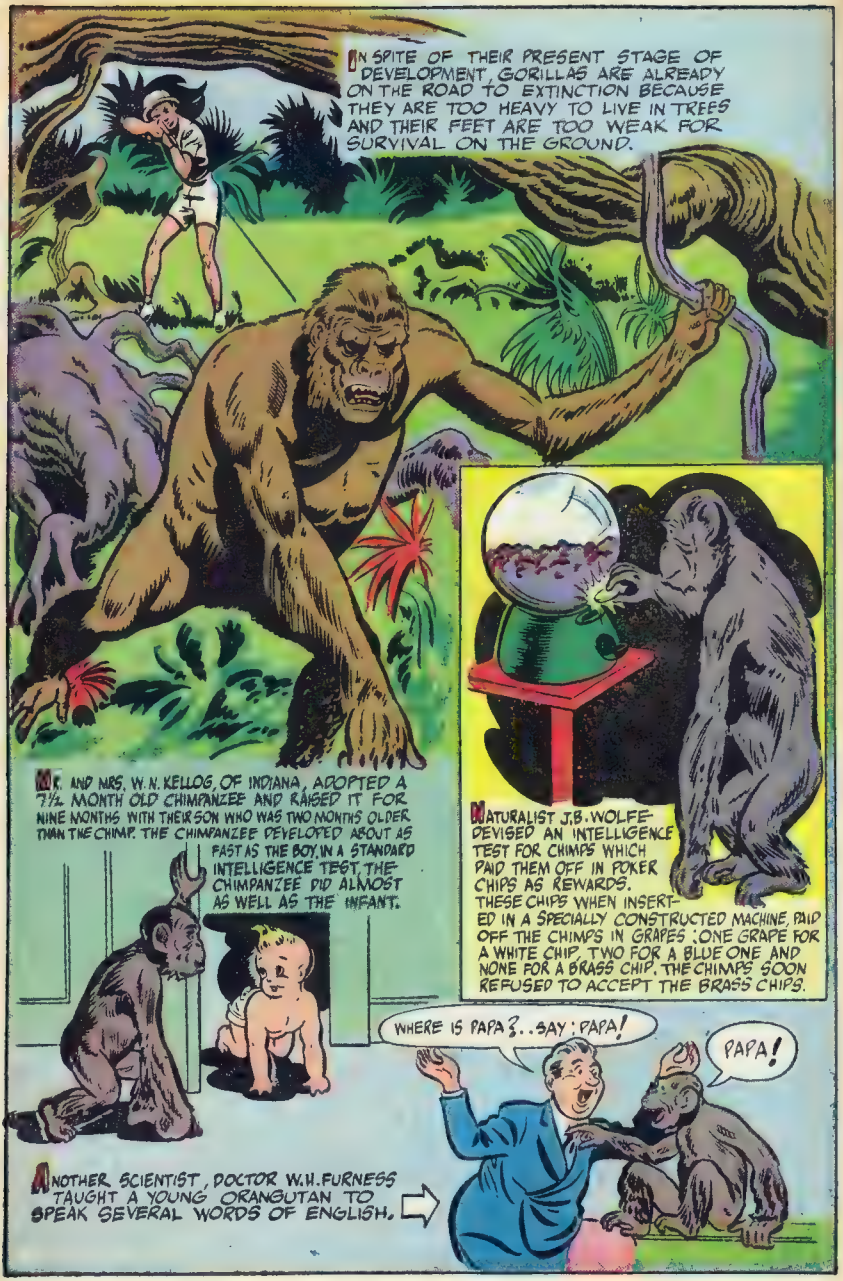
GARGANTUA

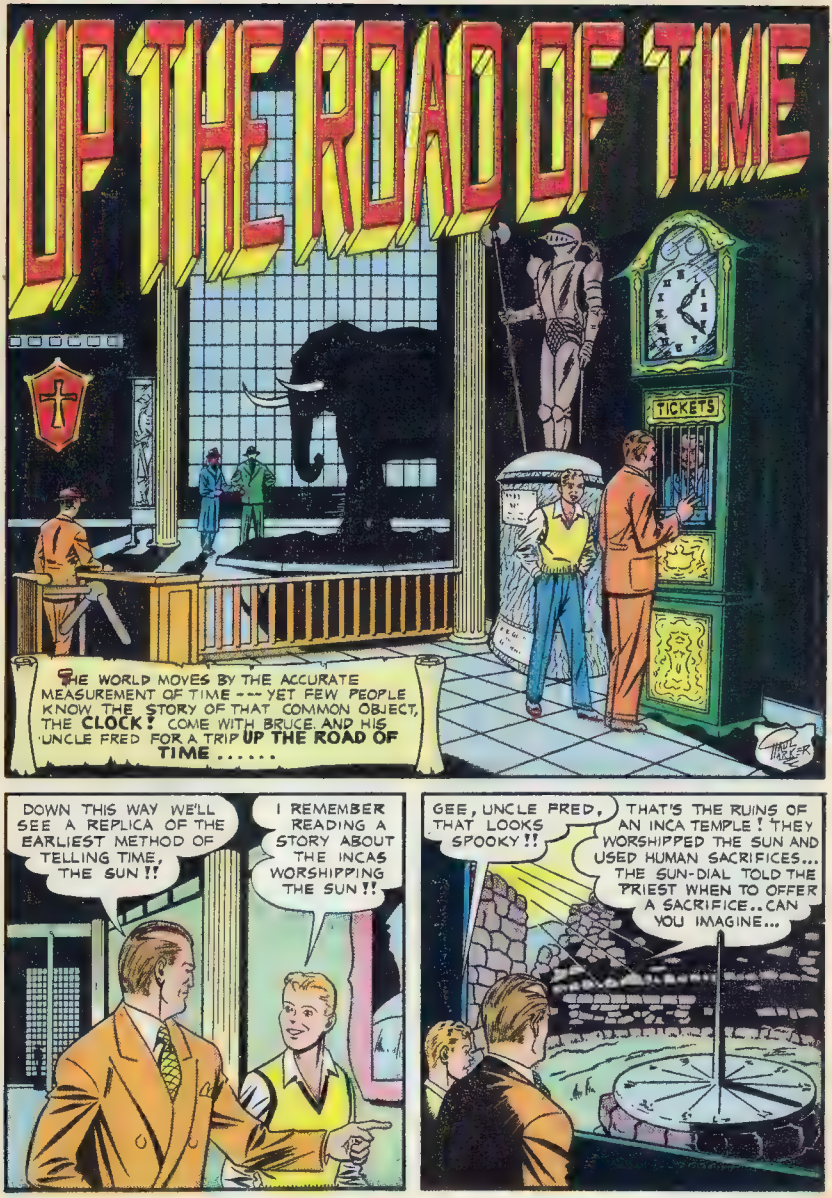
THE FEROCIOUSNESS OF THE GORILLAS HAS BEEN GREATLY EXAGGERATED! BEFORE THE FAMED "GARGANTUA" JOINED THE CIRCUS, HE LIVED A PEACEFUL LIFE WITH HIS OWNER IN BROOKLYN!

THE ORANGUTAN, WITH POORLY DEVELOPED FEET, SPENDS **ALL** OF HIS TIME IN TREES! THE CHIMPANZEE WHOSE FEET ARE BETTER DEVELOPED, SPENDS HALF OF HIS TIME ON THE GROUND AND THE OTHER HALF IN TREES!

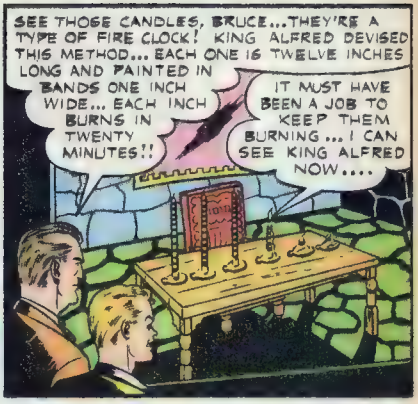
THE GORILLA SPENDS ALL HIS WAKING TIME ON THE GROUND. BUT SINCE HE HAS WEAK ARCHES, HE SUPPORTS HIS GREAT WEIGHT (AVERAGE 500 POUNDS) BY USING HIS STRONG FOREARMS ON THE GROUND, ALTHOUGH HE LOOKS AWKWARD IN THIS POSITION, HE CAN OUTRUN THE AVERAGE HUMAN BEING!

THE GREAT APES ARE MORE CLOSELY RELATED TO MAN THAN ARE THE MONKIES. NOTE THE SIMILARITY IN SKELETAL CONSTRUCTION. IT IS MAN'S SMALLER FEET **PLUS** THE *ARCH* OF HIS FOOT THAT ENABLES HIM TO WALK MORE ERECTLY THAN THE APES.

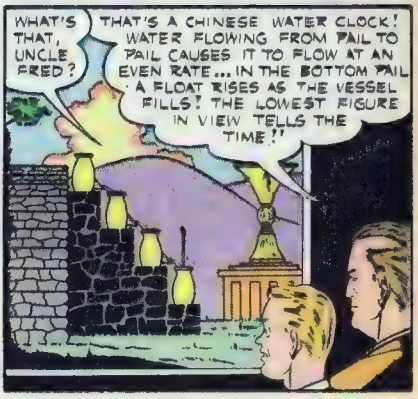

IN SPITE OF THEIR PRESENT STAGE OF DEVELOPMENT, GORILLAS ARE ALREADY ON THE ROAD TO EXTINCTION BECAUSE THEY ARE TOO HEAVY TO LIVE IN TREES AND THEIR FEET ARE TOO WEAK FOR SURVIVAL ON THE GROUND.
MR. AND MRS. W. N. KELLOG, OF INDIANA, ADOPTED A 7½ MONTH OLD CHIMPANZEE AND RAISED IT FOR NINE MONTHS WITH THEIR SON WHO WAS TWO MONTHS OLDER THAN THE CHIMP. THE CHIMPANZEE DEVELOPED ABOUT AS FAST AS THE BOY, IN A STANDARD INTELLIGENCE TEST, THE CHIMPANZEE DID ALMOST AS WELL AS THE INFANT.
NATURALIST J.B. WOLFE DEVISED AN INTELLIGENCE TEST FOR CHIMPS WHICH PAID THEM OFF IN POKER CHIPS AS REWARDS. THESE CHIPS WHEN INSERTED IN A SPECIALLY CONSTRUCTED MACHINE, PAID OFF THE CHIMPS IN GRAPES ; ONE GRAPE FOR A WHITE CHIP, TWO FOR A BLUE ONE AND NONE FOR A BRASS CHIP. THE CHIMPS SOON REFUSED TO ACCEPT THE BRASS CHIPS.
ANOTHER SCIENTIST, DOCTOR W.H. FURNESS TAUGHT A YOUNG ORANGUTAN TO SPEAK SEVERAL WORDS OF ENGLISH.
WHERE IS PAPA ? .. SAY : PAPA !
PAPA !

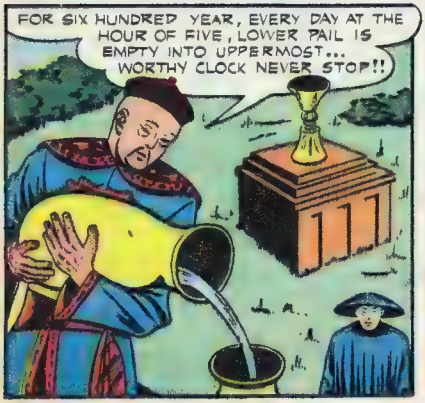

UP THE ROAD OF TIME
TICKETS
THE WORLD MOVES BY THE ACCURATE MEASUREMENT OF TIME --- YET FEW PEOPLE KNOW THE STORY OF THAT COMMON OBJECT, THE CLOCK! COME WITH BRUCE AND HIS UNCLE FRED FOR A TRIP UP THE ROAD OF TIME .....
DOWN THIS WAY WE'LL SEE A REPLICA OF THE EARLIEST METHOD OF TELLING TIME, THE SUN!!
I REMEMBER READING A STORY ABOUT THE INCAS WORSHIPPING THE SUN!!
GEE, UNCLE FRED, THAT LOOKS SPOOKY!!
THAT'S THE RUINS OF AN INCA TEMPLE! THEY WORSHIPPED THE SUN AND USED HUMAN SACRIFICES... THE SUN-DIAL TOLD THE PRIEST WHEN TO OFFER A SACRIFICE..CAN YOU IMAGINE...

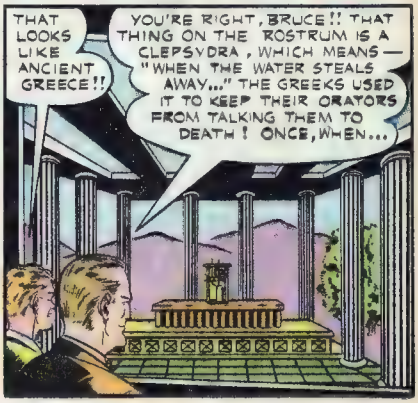
THE SUN RISES! PREPARE THE GIFT FOR THE SHINING GOD!!
IT SHALL BE DONE!

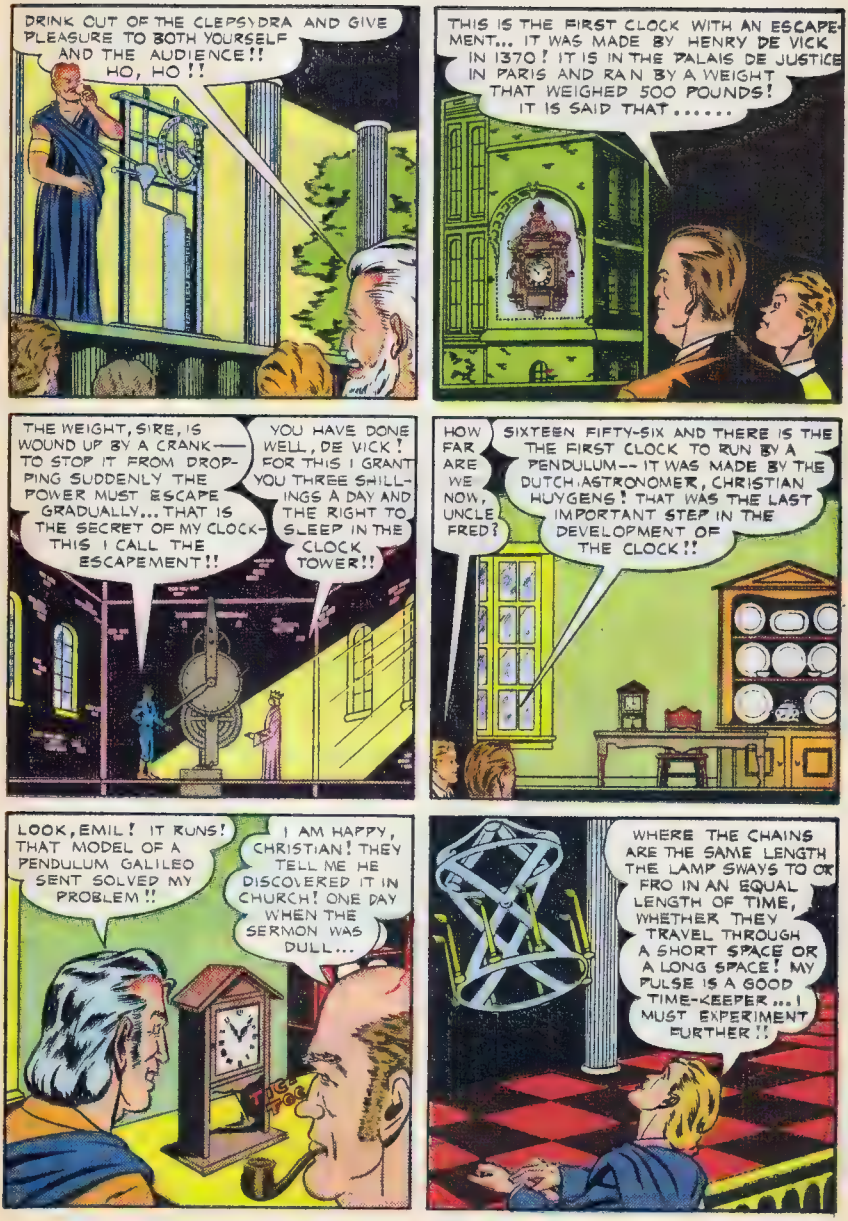

SEE THOSE CANDLES, BRUCE...THEY'RE A TYPE OF FIRE CLOCK! KING ALFRED DEVISED THIS METHOD... EACH ONE IS TWELVE INCHES LONG AND PAINTED IN BANDS ONE INCH WIDE... EACH INCH BURNS IN TWENTY MINUTES!!
IT MUST HAVE BEEN A JOB TO KEEP THEM BURNING ...! I CAN SEE KING ALFRED NOW....

AT LAST! A WAY TO TIME MY LABORS-- SEE TO IT THAT THE CANDLES ARE NOT UNATTENDED!!

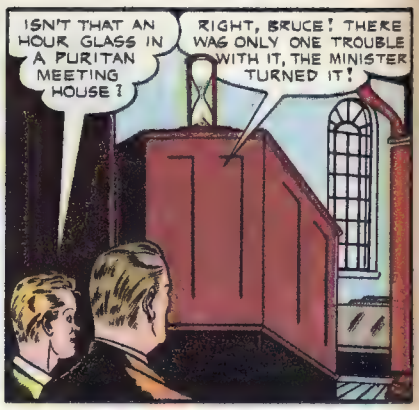

WHAT'S THAT, UNCLE FRED?
THAT'S A CHINESE WATER CLOCK! WATER FLOWING FROM PAIL TO PAIL CAUSES IT TO FLOW AT AN EVEN RATE... IN THE BOTTOM PAIL A FLOAT RISES AS THE VESSEL FILLS! THE LOWEST FIGURE IN VIEW TELLS THE TIME!

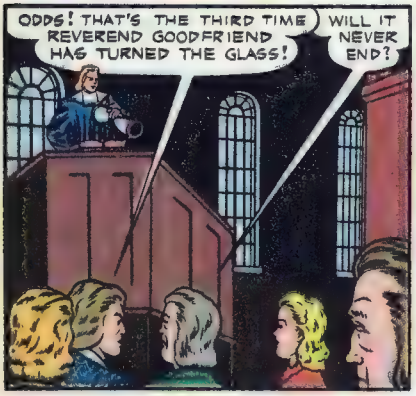

FOR SIX HUNDRED YEAR, EVERY DAY AT THE HOUR OF FIVE, LOWER PAIL IS EMPTY INTO UPPERMOST... WORTHY CLOCK NEVER STOP!!

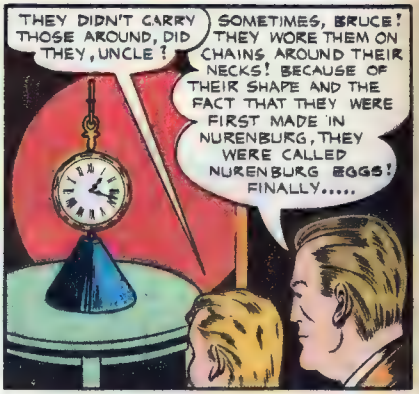

THAT LOOKS LIKE ANCIENT GREECE!!
YOU'RE RIGHT, BRUCE!! THAT THING ON THE ROSTRUM IS A CLEPSYDRA, WHICH MEANS— "WHEN THE WATER STEALS AWAY..." THE GREEKS USED IT TO KEEP THEIR ORATORS FROM TALKING THEM TO DEATH! ONCE, WHEN...

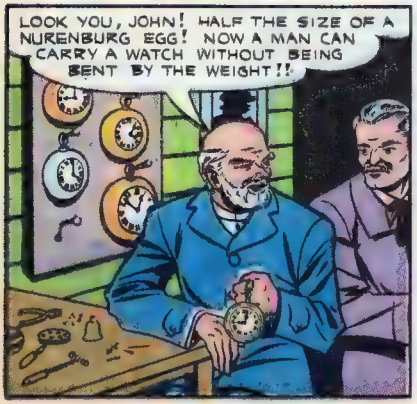

DRINK OUT OF THE CLEPSYDRA AND GIVE PLEASURE TO BOTH YOURSELF AND THE AUDIENCE!! HO, HO!!
THIS IS THE FIRST CLOCK WITH AN ESCAPEMENT... IT WAS MADE BY HENRY DE VICK IN 1370! IT IS IN THE PALAIS DE JUSTICE IN PARIS AND RAN BY A WEIGHT THAT WEIGHED 500 POUNDS! IT IS SAID THAT.....
THE WEIGHT, SIRE, IS WOUND UP BY A CRANK—— TO STOP IT FROM DROPPING SUDDENLY THE POWER MUST ESCAPE GRADUALLY... THAT IS THE SECRET OF MY CLOCK— THIS I CALL THE ESCAPEMENT!!
YOU HAVE DONE WELL, DE VICK! FOR THIS I GRANT YOU THREE SHILLINGS A DAY AND THE RIGHT TO SLEEP IN THE CLOCK TOWER!!
HOW FAR ARE WE NOW, UNCLE FRED?
SIXTEEN FIFTY-SIX AND THERE IS THE THE FIRST CLOCK TO RUN BY A PENDULUM-- IT WAS MADE BY THE DUTCH ASTRONOMER, CHRISTIAN HUYGENS! THAT WAS THE LAST IMPORTANT STEP IN THE DEVELOPMENT OF THE CLOCK!!
LOOK, EMIL! IT RUNS! THAT MODEL OF A PENDULUM GALILEO SENT SOLVED MY PROBLEM!!
I AM HAPPY, CHRISTIAN! THEY TELL ME HE DISCOVERED IT IN CHURCH! ONE DAY WHEN THE SERMON WAS DULL...
WHERE THE CHAINS ARE THE SAME LENGTH THE LAMP SWAYS TO OR FRO IN AN EQUAL LENGTH OF TIME, WHETHER THEY TRAVEL THROUGH A SHORT SPACE OR A LONG SPACE! MY PULSE IS A GOOD TIME-KEEPER... I MUST EXPERIMENT FURTHER!!

IT WAS LUCKY FOR ME THE SERMON WAS SO DULL! FROM THAT BEGINNING HE LEARNED A PENDULUM THIRTY-NINE INCHES IN LENGTH WILL MAKE A SWEEP IN JUST ONE SECOND OF TIME-- HERE IS HIS ORIGINAL MODEL!!


ISN'T THAT AN HOUR GLASS IN A PURITAN MEETING HOUSE?
RIGHT, BRUCE! THERE WAS ONLY ONE TROUBLE WITH IT, THE MINISTER TURNED IT!


ODDS! THAT'S THE THIRD TIME REVEREND GOODFRIEND HAS TURNED THE GLASS!
WILL IT NEVER END?


THEY DIDN'T CARRY THOSE AROUND, DID THEY, UNCLE?
SOMETIMES, BRUCE! THEY WORE THEM ON CHAINS AROUND THEIR NECKS! BECAUSE OF THEIR SHAPE AND THE FACT THAT THEY WERE FIRST MADE IN NURENBURG, THEY WERE CALLED NURENBURG EGGS! FINALLY.....

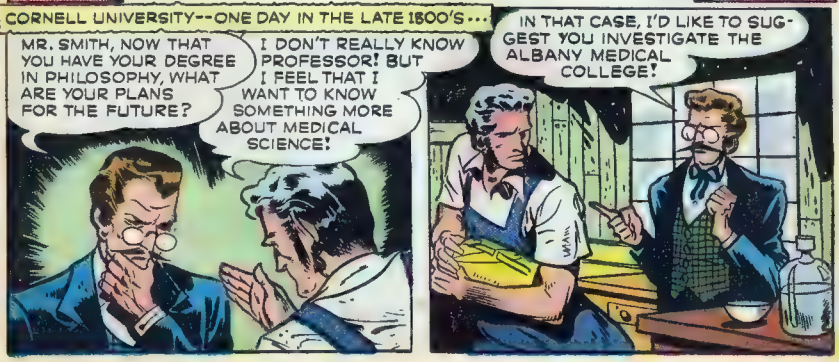

LOOK YOU, JOHN! HALF THE SIZE OF A NURENBURG EGG! NOW A MAN CAN CARRY A WATCH WITHOUT BEING BENT BY THE WEIGHT!!

WELL, IT'S TIME WE WERE GETTING HOME!
BOY! UNCLE FRED, THAT NURENBURG WATCH WOULD HAVE MADE SIX OF YOURS!!
EXIT ONLY
THE END

THEOBALD SMITH AND TEXAS FEVER

FIFTY YEARS AGO, NORTHERN CATTLE SHIPPED TO GRAZE IN THE SOUTH GOT SICK AND DIED FROM A MYSTERIOUS DISEASE THE CATTLEMEN CALLED **TEXAS FEVER**. SOUTHERN COWS SHIPPED TO THE NORTH TRAILED THIS DISEASE WITH THEM, KILLING OFF MORE NORTHERN CATTLE. TO EXPLAIN THIS RIDDLE, THEOBALD SMITH DEVOTED SEVERAL YEARS OF HIS LIFE EXPERIMENTING IN THE LABORATORY AND ON THE RANGE. HE WAS THE FIRST AND PROBABLY THE GREATEST OF ALL AMERICAN **MICROBE HUNTERS**!

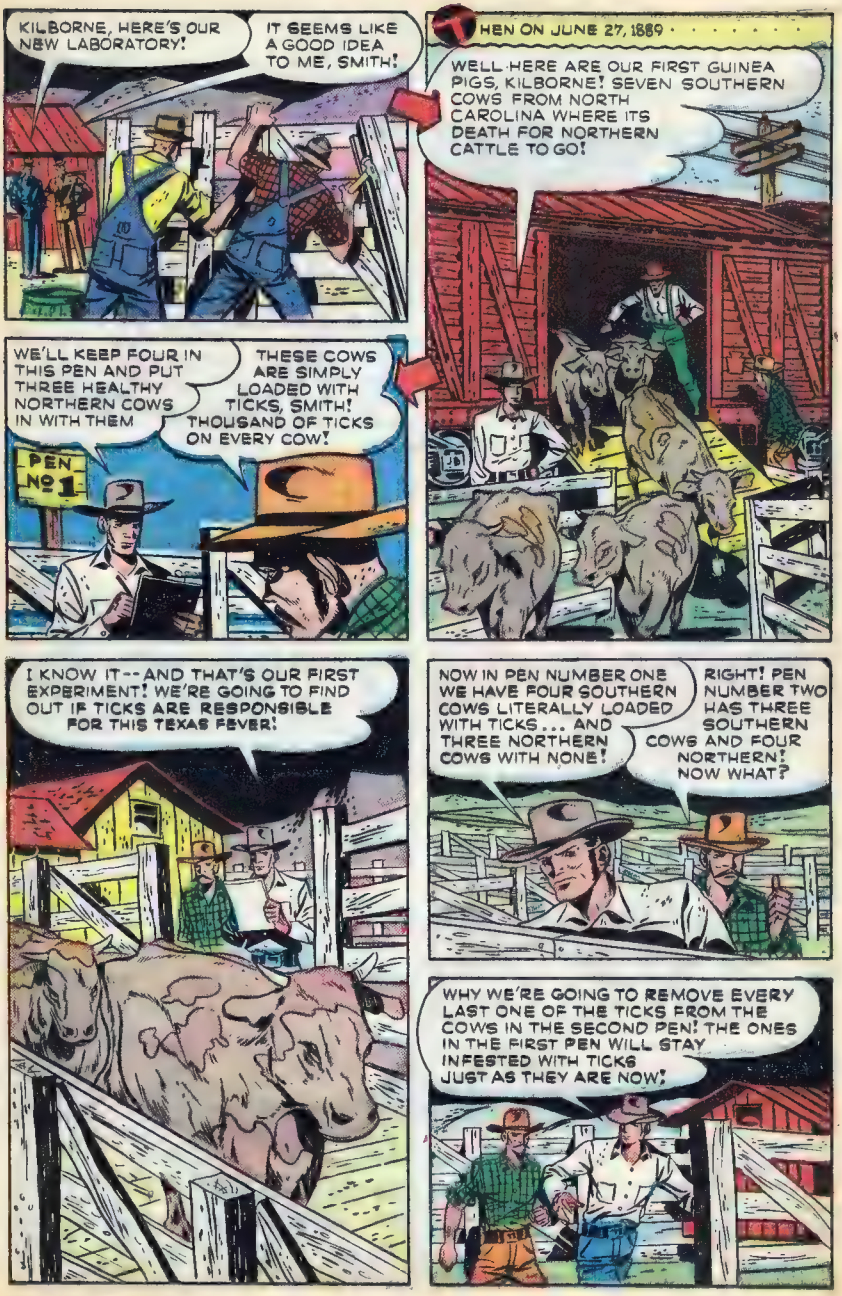
CORNELL UNIVERSITY--ONE DAY IN THE LATE 1800'S...

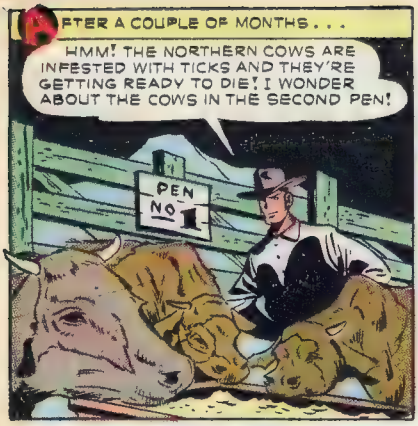

MR. SMITH, NOW THAT YOU HAVE YOUR DEGREE IN PHILOSOPHY, WHAT ARE YOUR PLANS FOR THE FUTURE?
I DON'T REALLY KNOW PROFESSOR! BUT I FEEL THAT I WANT TO KNOW SOMETHING MORE ABOUT MEDICAL SCIENCE!
IN THAT CASE, I'D LIKE TO SUGGEST YOU INVESTIGATE THE ALBANY MEDICAL COLLEGE!

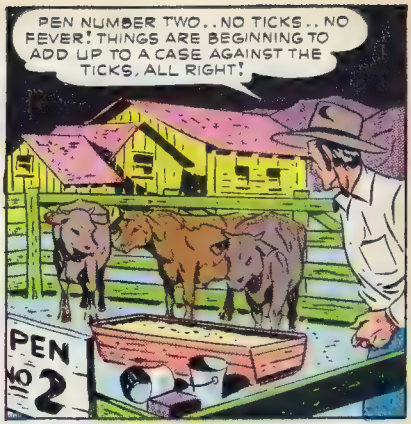
SEVERAL YEARS LATER···
LOOK AT THEOBALD! SOMEDAY HE'S GOING TO TURN INTO A MICROSCOPE!
I'LL SAY! HE SPENDS HOURS AND HOURS PEEKING INTO THE THING!
STILL ENJOYING YOURSELF, PEERING AT MICROBES, THEOBALD?
EVERYBODY AND HIS BROTHER ARE RUSHING TO GERMANY THESE DAYS TO STUDY UNDER DR. ROBERT KOCH... WHY DON'T YOU GO, TOO, IF YOU'RE SO INTERESTED IN BACILLI?
I ONLY WISH I COULD! BUT YOU SEE, I'M NOT THE SON OF WEALTHY FOLKS SO I HAVE TO STAY IN AMERICA AND FIND A JOB SO I CAN EAT!
OH--ER--YES! OF COURSE! DIDN'T MEAN TO INSULT YOU, SMITH!
THAT'S ALL RIGHT, FELLOWS! BUT YOU SEE, I'VE DECIDED I'M NOT GOING TO BE A DOCTOR OF MEDICINE AFTER ALL! I CAN'T GO THROUGH LIFE WATCHING MY PATIENTS DIE BECAUSE WE DON'T KNOW ENOUGH ABOUT MICROBES TO HELP THEM!
AT CORNELL, I LEARNED MY MATHEMATICS, GERMAN AND PHYSICAL SCIENCE. NOW, WITH MY KNOWLEDGE OF MEDICINE, I'M GOING TO APPLY WHAT I LEARNED TO TRACKING DOWN DISEASE--CARRYING GERMS!
THEOBALD, SOMETHING TELLS ME YOU'RE GOING TO BE A SUCCESS AT IT!
THE BEST OF LUCK, SMITH! I'LL FOLLOW YOUR CAREER WITH INTEREST!

SMITH SOON FOUND A HUMBLE JOB IN THE EQUALLY HUMBLE BUREAU OF ANIMAL INDUSTRY, IN WASHINGTON, D.C.
DR. SMITH, WE HAVE VERY LITTLE MONEY AT OUR DISPOSAL BUT I'M TRYING TO DO AS MUCH WITH IT AS IS HUMANLY POSSIBLE!
I'M DEEPLY INTERESTED IN THE EFFECTS MICROBES HAVE ON COWS AND HOGS AND OTHER ANIMALS, BUT I'LL CONFESS FRANKLY THAT I KNOW NOTHING AT ALL ABOUT MICROBE RESEARCH! THAT'S UP TO YOU!
THERE'S NOTHING I'D RATHER DO, DR. SALMON!
WELL, YOU'VE GOT PLENTY TO START ON, SMITH! HERE'S ANOTHER REQUEST FROM SOME CATTLEMEN ASKING US TO FIND OUT WHAT'S CAUSING THE NORTHERN CATTLE GRAZING IN THE SOUTH TO DIE LIKE FLIES!
YES, I'VE HEARD RUMORS ABOUT THAT!
SMITH, I'M PUTTING YOU AND KILBORNE HERE TO WORK ON THAT PROBLEM! I HAVE ONLY ONE ORDER TO GIVE YOU! FIND THE GERM THAT CAUSES THE FEVER!
THUS, THEOBALD SMITH AND HIS ASSISTANT BEGAN TO WORK ON THE CASE!
ANOTHER SHIPMENT OF CATTLE FROM THE SOUTH... AND LOOK AT THEM!!!
IT'S FANTASTIC!
HUNDREDS OF THEM DEAD! BUT THEY'RE ALL CATTLE THAT WERE ORIGINALLY SENT FROM THE NORTH TO GRAZE IN THE SOUTH!
AND THE SOUTHERN CATTLE ARE NOT AFFECTED! KILBORNE, WE'RE GOING TO TAKE LIVERS AND SPLEENS OUT OF SOME OF THESE DEAD COWS AND EXAMINE THEM IN OUR LABORATORY!

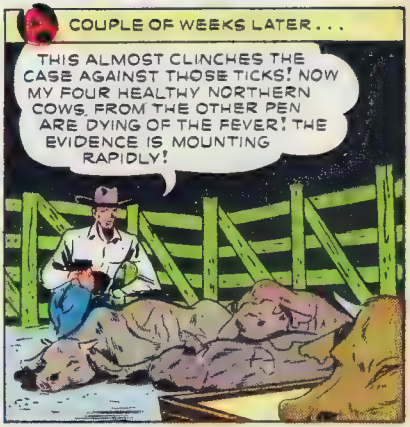
WHAT DO YOU FIND, SMITH?
BACILLI! A REGULAR MANAGERIE OF THEM! BUT WHY- AND HOW?
WHAT ARE YOU DOING, SMELLING THE MEAT?
WHEW! I'LL SAY! SMELL IT YOURSELF! THESE PIECES OF LIVER AND SPLEEN ARE SPOILED!
I'M GOING TO CONTACT A GROUP OF CATTLEMEN AT ONCE AND HAVE THEM REMOVE THE INSIDES FROM THEIR CATTLE THE MOMENT THEY DIE... PACK THEM IN ICE AT ONCE AND SENT TO ME HERE FOR EXAMINATION!
THE HARASSED CATTLEMEN WERE QUICK TO COMPLY WITH SMITH'S REQUEST...
NOW, WE'LL SEE WHAT THESE FRESH LIVERS AND SPLEENS TELL US... IF ANYTHING!
HMM! NO SIGNS OF GERMS HERE AT ALL! BUT THE RED CORPUSCLES OF THE BLOOD ARE STRANGELY BROKEN UP! THEY LOOK AS IF THEY WERE WRECKED BY SOMETHING!
THAT SETTLES IT! I'M GOING OUT TO STUDY THIS THING AT FIRST HAND! THERE'S NO SUBSTITUTE FOR AN ON-THE-SPOT INVESTIGATION!

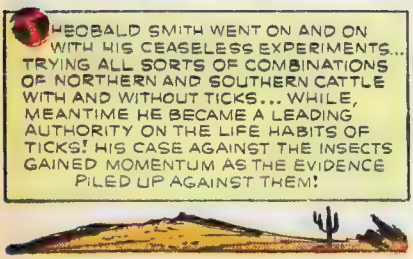

KILBORNE, HERE'S OUR NEW LABORATORY!
IT SEEMS LIKE A GOOD IDEA TO ME, SMITH!
THEN ON JUNE 27, 1889 . . . . . .
WELL-HERE ARE OUR FIRST GUINEA PIGS, KILBORNE! SEVEN SOUTHERN COWS FROM NORTH CAROLINA WHERE ITS DEATH FOR NORTHERN CATTLE TO GO!
WE'LL KEEP FOUR IN THIS PEN AND PUT THREE HEALTHY NORTHERN COWS IN WITH THEM
THESE COWS ARE SIMPLY LOADED WITH TICKS, SMITH! THOUSAND OF TICKS ON EVERY COW!
PEN No 1
I KNOW IT--AND THAT'S OUR FIRST EXPERIMENT! WE'RE GOING TO FIND OUT IF TICKS ARE RESPONSIBLE FOR THIS TEXAS FEVER!
NOW IN PEN NUMBER ONE WE HAVE FOUR SOUTHERN COWS LITERALLY LOADED WITH TICKS ... AND THREE NORTHERN COWS WITH NONE!
RIGHT! PEN NUMBER TWO HAS THREE SOUTHERN COWS AND FOUR NORTHERN! NOW WHAT?
WHY WE'RE GOING TO REMOVE EVERY LAST ONE OF THE TICKS FROM THE COWS IN THE SECOND PEN! THE ONES IN THE FIRST PEN WILL STAY INFESTED WITH TICKS JUST AS THEY ARE NOW!

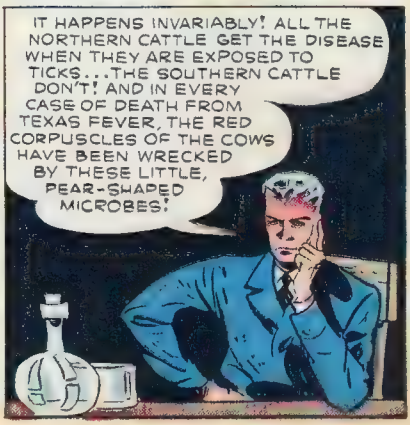

AFTER A COUPLE OF MONTHS . . .
HMM! THE NORTHERN COWS ARE INFESTED WITH TICKS AND THEY'RE GETTING READY TO DIE! I WONDER ABOUT THE COWS IN THE SECOND PEN!
PEN NO 1


PEN NUMBER TWO . . NO TICKS . . NO FEVER! THINGS ARE BEGINNING TO ADD UP TO A CASE AGAINST THE TICKS, ALL RIGHT!
PEN NO 2

BUT I CAN'T JUMP TO CONCLUSIONS! THE NEXT STEP IS TO PUT THESE HEALTHY NORTHERN COWS INTO THE SAME PEN WITH THE SICK ONES AND THE HEALTHY SOUTHERN COWS -- AND THE TICKS!


A COUPLE OF WEEKS LATER . . .
THIS ALMOST CLINCHES THE CASE AGAINST THOSE TICKS! NOW MY FOUR HEALTHY NORTHERN COWS, FROM THE OTHER PEN ARE DYING OF THE FEVER! THE EVIDENCE IS MOUNTING RAPIDLY!


THEOBALD SMITH WENT ON AND ON WITH HIS CEASELESS EXPERIMENTS... TRYING ALL SORTS OF COMBINATIONS OF NORTHERN AND SOUTHERN CATTLE WITH AND WITHOUT TICKS... WHILE, MEANTIME HE BECAME A LEADING AUTHORITY ON THE LIFE HABITS OF TICKS! HIS CASE AGAINST THE INSECTS GAINED MOMENTUM AS THE EVIDENCE PILED UP AGAINST THEM!


IT HAPPENS INVARIABLY! ALL THE NORTHERN CATTLE GET THE DISEASE WHEN THEY ARE EXPOSED TO TICKS . . . THE SOUTHERN CATTLE DON'T! AND IN EVERY CASE OF DEATH FROM TEXAS FEVER, THE RED CORPUSCLES OF THE COWS HAVE BEEN WRECKED BY THESE LITTLE, PEAR-SHAPED MICROBES!

EVEN WITH THESE FACTS BEFORE HIM--SMITH WENT ON EXPERIMENTING

THESE CANS OF LIVE TICKS FROM THE SOUTH MAY BE MY FINAL LINK IN THE CHAIN OF EVIDENCE I NEED TO COME TO AN INDISPUTABLE DECISION!

THAT DOES IT! THE WHOLE HERD HAS CONTRACTED TEXAS FEVER FROM THOSE TICKS!

I GUESS AFTER FOUR YEARS OF EXPERIMENTS, I CAN SAFELY WRITE MY REPORT! I KNOW THE CATTLEMEN AND OTHERS ARE DISCOURAGED WITH MY SLOWNESS, BUT IT'S BEEN WORTH IT TO KNOW THAT I'M RIGHT!

Investigation into the nature causation, and prevention of Texas or southern cattle fever.... No 1

WITH THE SMITH REPORT PROVING THAT THE FEVER WAS CAUSED BY THE TICKS, CATTLEMEN BEGAN SENDING ALL CATTLE THROUGH BATHS OF INSECTICIDES WHICH REMOVED ALL THE TICKS. TEXAS FEVER WAS ON ITS WAY OUT

THUS THEOBALD SMITH ADVANCED THE CAUSE OF MANKIND OVER DISEASE-CARRYING INSECTS... SHOWING THAT A DISEASE CAN BE CARRIED BY A CERTAIN TYPE OF INSECT AND ONLY THAT ONE TYPE! HIS STUDIES OPENED THE WAY FOR DR. WALTER REED'S CONQUEST OF YELLOW FEVER (SCIENCE COMICS №2) AS WELL AS OTHER IMPORTANT ADVANCEMENTS IN THE SCIENCE OF MICROBE HUNTING!

Men + Brains + Curiosity

By Joseph

IT HAS only been a matter of a couple of hundred years—an infinitesimal dot on the long line of time—since men of science held what they considered to be learned sessions on the subject of science.

Today, such sessions as those would make very laughable material for top-flight comic strips or motion picture comedies. For example, one group of "scientists" had quite a good many meetings to discuss, of all things, the approximate number of angels that could gather on the head of a common pin!

These men were very serious about this thing, and their arguments waxed hot and heavy. Some of them claimed that angels were such-and-such a size and this group was opposed by those who held that angels were larger than that . . . or smaller than that.

Now, this is not a far-fetched example of the kind of scientific fol-de-rol that went on in those days. On the contrary, it is a very typical case and entirely true.

In England, only a few generations ago, a meeting of a learned society gathered together for the purpose of examining certain "scientific" facts. One of the subjects on the agenda was a discussion of the number of teeth in a horse's mouth.

It happened that this meeting was open to the public, and so there was a goodly gathering of citizens in the balcony of the hall. As the arguments of these great men waned and flowed, a young man in the group of spectators became increasingly restless.

After several hours of heated discussion—during the course of which all sorts of reasons were advanced to prove that horses had twenty teeth or thirty teeth or thirty-two teeth—the young fellow in the balcony had reached the end of his rope.

Leaping to his feet, he amazed the assembled citizenry—to say nothing of the scientists—by suddenly shouting: "For heavens' sake, if you want to know how many teeth there are in a horse's mouth, why don't you find a horse, open his mouth and count them!"

This type of thinking was such a shock to the scientists and to their scientific dignity, that they ordered the young man ejected from the meeting!

TODAY, with our modern scientists smashing atoms and bouncing radar waves off the moon, such goings-on appear entirely ridiculous and insane. Yet, those earlier scientists were using the basic ingredients of scientific research: brains and curiosity. Their only mistake lay in tackling a problem which did not exist (in the case of the "angels on the head of a pin") and in merely theorizing (in the case of the "horse's teeth").

For it is an axiom that when a given man develops an interest—that is to say, grows curious—about a given thing, the wheels of scientific progress automatically begin to turn. The only other thing necessary to complete

= Scientific Progress

Blair

the process is that the man who develops this curiosity pattern must necessarily be equipped with a brain. Here, the word "brain" is, of course, used loosely. But it infers that this brain is a good one, well-trained, and able to think along logical and constructive lines.

As far back as mankind goes, the combination of men, brains and curiosity has accounted for the progress of our civilization.

In the days of the cave men, the man who was bested by his enemy from across the canyon began to feel very angry about the thing.

"I can't lick that big fellow because he's too strong for me," said the loser of the bout. "But I wonder what I can do about the situation?" So this primitive scientist sat down and thought it over. He had a brain. He was curious to know something.

So while he was sitting there outside his cave, his eyes came to rest on a length of wood . . . a section of a lightning-struck tree, perhaps.

"Now if I took that stick," said the cave man to himself, "and held it in my hand and beat about me with it, I would have a distinct advantage over my enemy!"

THIS, he did. And by using this weapon he was able to conquer his enemy. Here, hypothetically, we have an example of the first, crude application of the Brains-Plus-Curiosity formula to the progress of science!

The same examples—much more highly advanced—can be found today almost everywhere you look. A few short years ago, for instance, hand irons were heated over wood-burning stoves. Someone began to get curious about irons. "Why not an electric iron?" he wondered.

It wasn't very long until we had electric irons. But it didn't stop with that. Someone else began to wonder why you had to use a damp cloth to press certain materials. "Why not incorporate the dampening agent right in the iron itself, thus eliminating the irksome task of applying damp cloths to the material to be pressed?" Why not, indeed! And so today we have the electric iron that can be used (filled with water) as a combination dampener-and-ironer.

There are thousands of other examples—millions of examples—of this advancement of scientific thought by the unbeatable combination of brains and curiosity. Otis with his first practical elevator is one. Marconi and his wireless (see SCIENCE Comics No. 1) is another. De Forrest with his cathode ray tube (the basis of television) is a third.

We could go on and on, recalling other instances of this application of brains and curiosity to the furtherance of science and therefore of human existence in general. In fact, today it is not even a matter of "recalling" . . . a glance at the daily paper will invariably bring one more new example to your attention!

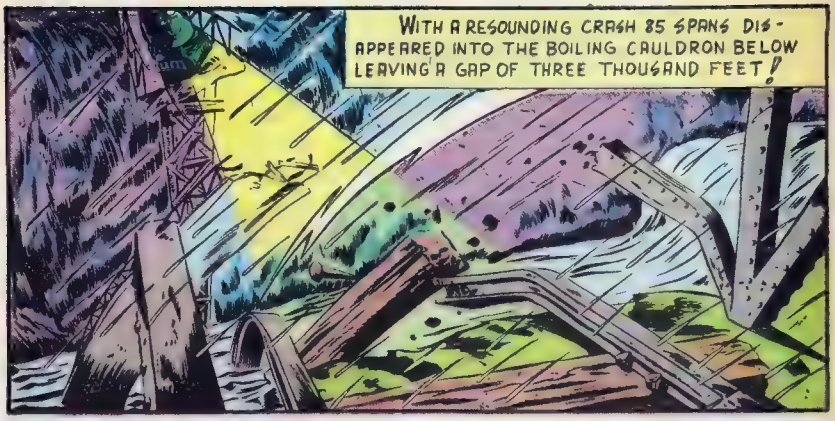
THE STORY OF THE BRIDGE

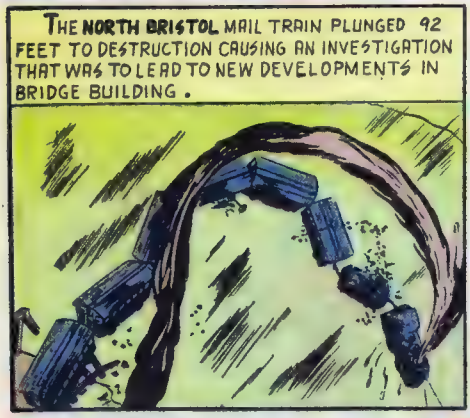
THE HISTORY OF THE BRIDGE MORE CLEARLY THAN ANYTHING ELSE MIRRORS MAN'S EFFORT AND ACHIEVEMENT. FROM THE BRIDGE OF VINES TO THE GREAT SUSPENSION BRIDGE OF WROUGHT-IRON AND STEEL, WE FOLLOW THE STORY OF CIVILIZATION.

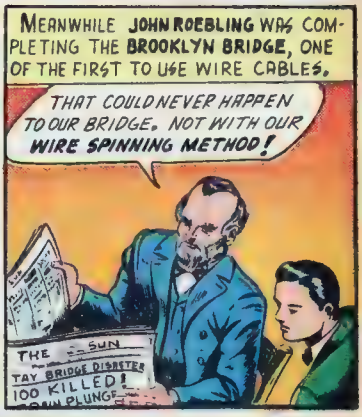
FINALLY AFTER CENTURIES MAN MADE THE FIRST SUSPENSION BRIDGE.
THERE LIES THE HUNTING GROUND. WE HAVE SAVED THREE DAYS BY THE USE OF THE BRIDGE!
THEN CAME THE WOODEN BRIDGES OF THE EARLY ROMANS, VENERATED AND REPAIRED BY THE PRIESTS.
TOMORROW IS THE IDES OF MAY. WE MUST FINISH BY NIGHTFALL TO BE READY FOR THE PROCESSION!
THIS YEAR THEY THROW THIRTY EFFIGIES TO FATHER TIBER.
CERTAINLY THAT SHOULD CALM HIS ANGER!
PRESERVE OUR BRIDGE FOR THE COMING YEAR. RISE NOT IN ANGER, FATHER TIBER. KEEP US FROM THE RAVAGES OF FLOOD!
CALIGULA'S BRIDGE OF BOATS, DESTINED TO BE THE LONGEST BRIDGE IN THE WORLD FOR 19 CENTURIES WAS BUILT TO SATISFY THE PRIDE OF THE DERANGED EMPEROR.
CROSS THE BAYS OF BAIA AND PUTEOLI WITH A BRIDGE OF BOATS. I, CALIGULA, CAN WALK UPON THE WATERS AS ORDINARY MORTALS WALK ON LAND!
'TIS SAID THE BRIDGE IS THREE AND A HALF MILES LONG!
TRULY THE EMPEROR WALKS ON WATER!

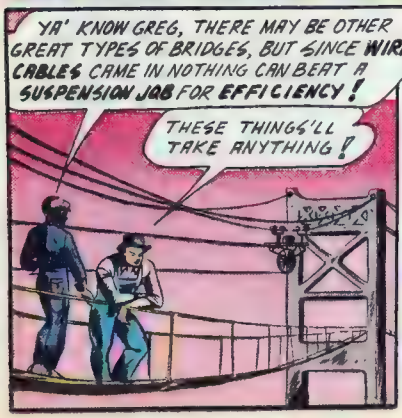
WITH THE INVENTION OF THE ARCH BY APOLLODORUS THERE BEGAN A NEW EPOCH OF BRIDGE BUILDING.
WHAT DO YOU BUILD?
YOU MUST COME FROM FAR STRANGER. THIS IS THE GREAT ACQUADUCT ORDERED BY THE EMPEROR AGRIPPA TO CARRY WATER TO NIMES!
TRULY THE ARCH IS A WONDROUS DISCOVERY!
WITH OUT IT WE COULD NEVER HAVE CROSSED THAT CHASM!
WITH THE DESTRUCTION OF NOTRE DAME BRIDGE IN 1499 CAME THE DAWN OF RENAISSANCE ARCHITECTURE TO FRANCE.
I HAVE HEARD THE BRIDGE IS NOT SAFE. THE PILES ARE ROTTEN!
IT IS DOOMED TO FALL! A CRIME HAS BEEN COMMITTED ON IT!
A CARPENTER CHECKS THE PILES.
THE PILES ARE SO BADLY ROTTED IT WON'T STAND ANOTHER TWENTY FOUR HOURS!
THE PEOPLE LIVING ON THE BRIDGE MUST BE WARNED AND TOLD TO FLEE!

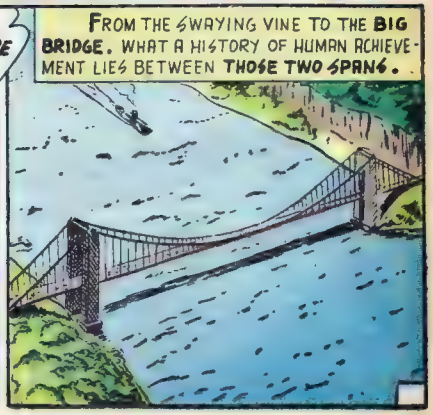
THE NEW BRIDGE HAD NOT ONLY SAFETY, BUT BEAUTY.
THE BRIDGE WAS COSTLY FREMONT. I SHALL LEVY A TAX OF A PENNY ON ALL BEASTS IN THE MARKET WITH A CLOVEN FOOT AND ALL SALT WATER FISH!
CLEVERLY DONE, SIRE. AN ENDURING ENGINEERING FEAT LIKE THAT IS WORTH IT!
IN 1550 CAME THE TRUSS, THE BASIS OF MOST TRESTLES TODAY.
A TRIANGLE ON A BRIDGE! WHAT FOOLISHNESS IS THIS?
CAN YOU NOT SEE THAT A TRIANGLE CAN'T CHANGE ITS SHAPE? ITS RIGIDITY GIVES IT THE STRENGTH OF THE WOOD ITSELF!
A CURIOUS DEVELOPMENT WAS THE COVERED BRIDGE MEANT TO KEEP THE WEATHER OFF THE BOLTS AND BEAMS.
LUCKY THE BRIDGE IS SHAPED IN THIS MANNER OR IT WOULD BE RIPPED AWAY IN NO TIME!
AND WITH THIS ROOF IT SHOULD NEVER ROT!
IN 1825 THOMAS TELFORD ERECTED THE FIRST ALL METAL SUSPENSION BRIDGE AT MENAI STRAITS, WALES.
DO YOU THINK IT WILL WITHSTAND THE GALE?
I HOPE SO. SOMETHING MUST BE DONE TO OFFSET FLEXIBILITY!
I WOULD NOT HAVE DREAMED THE WIND HAD SUCH FORCE!
FORTUNATELY IT DID NOT FALL! WE MUST STRENGTHEN THE ROADWAY AND ADD TIMBER BEAMS! THEY ARE NOT AS FLEXIBLE AS IRON!
DECADES LATER WITH THE TAY BRIDGE DISASTER MEN HAD STILL NOT LEARNED TO JUDGE THE TERRIBLE FORCE OF THE WIND.


WITH A RESOUNDING CRASH 85 SPANS DISAPPEARED INTO THE BOILING CAULDRON BELOW LEAVING A GAP OF THREE THOUSAND FEET!


THE NORTH BRISTOL MAIL TRAIN PLUNGED 92 FEET TO DESTRUCTION CAUSING AN INVESTIGATION THAT WAS TO LEAD TO NEW DEVELOPMENTS IN BRIDGE BUILDING.

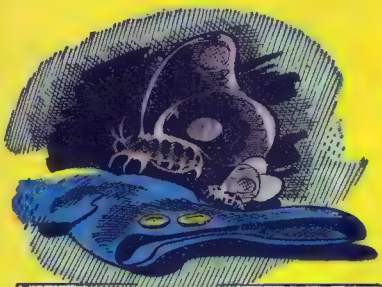

MEANWHILE JOHN ROEBLING WAS COMPLETING THE BROOKLYN BRIDGE, ONE OF THE FIRST TO USE WIRE CABLES.
THAT COULD NEVER HAPPEN TO OUR BRIDGE. NOT WITH OUR WIRE SPINNING METHOD!
THE SUN
TAY BRIDGE DISASTER
100 KILLED!


YA' KNOW GREG, THERE MAY BE OTHER GREAT TYPES OF BRIDGES, BUT SINCE WIRE CABLES CAME IN NOTHING CAN BEAT A SUSPENSION JOB FOR EFFICIENCY!
THESE THINGS'LL TAKE ANYTHING!


FROM THE SWAYING VINE TO THE BIG BRIDGE. WHAT A HISTORY OF HUMAN ACHIEVEMENT LIES BETWEEN THOSE TWO SPANS.

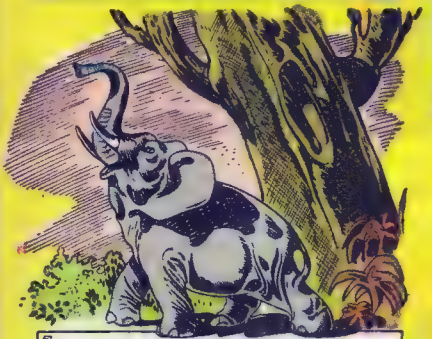
UN-NATURAL SCIENCE

CORRECTING SOME POPULAR MISCONCEPTIONS AND FALLACIES ABOUT LIVING THINGS IN THE WORLD AROUND US



2 MOTHS DO **NOT** EAT WOOLEN CLOTHING! IT IS THE LARVAE OF THE MOTH THAT DOES THE EATING. MOTHS CANNOT EAT ANYTHING BECAUSE THEY HAVE NEITHER MOUTHS NOR STOMACHS!

4 A WHALE DOES **NOT** HAVE VERY SMALL EYES...THEY ONLY SEEM SMALL IN COMPARISON WITH THE HUGE SIZE OF THEIR BODIES. ACTUALLY, THE WHALES' EYES ARE ABOUT THE SIZE OF LARGE GRAPEFRUIT AND ARE THE LARGEST EYES OF ANY LIVING THING!

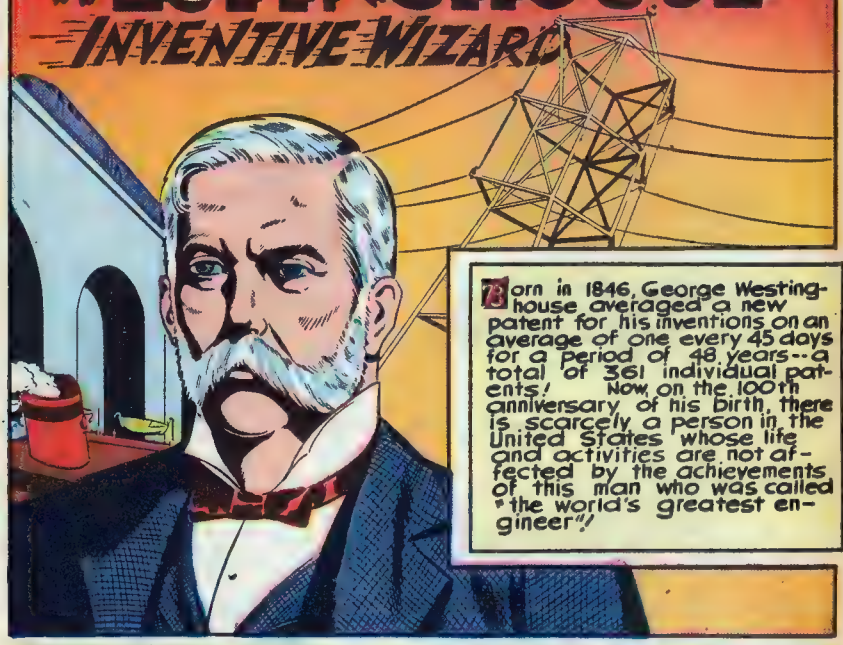


3 ELEPHANTS ARE **NOT** THE LARGEST LIVING THINGS ON EARTH! THE LARGEST (AND THE OLDEST) LIVING THINGS ON EARTH ARE THE GIGANTIC SEQUOIA AND REDWOOD TREES OF CALIFORNIA. INCIDENTALLY, SEQUOIAS AND REDWOODS ARE **NOT** THE SAME.... THEY ARE TWO DIFFERENT SPECIES!!!

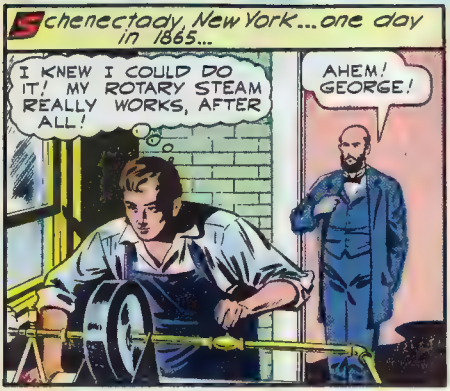
5 THERE IS NO SUCH THING AS A **WHITE ANT!** THE INSECTS COMMONLY CALLED "WHITE ANTS" ARE REALLY TERMITES AND THEY ARE **NOT** WHITE...THEY ARE YELLOWISH-BROWN!

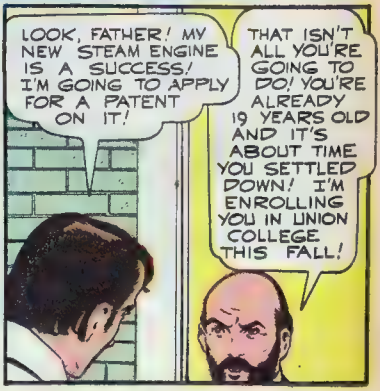
GEORGE WESTINGHOUSE

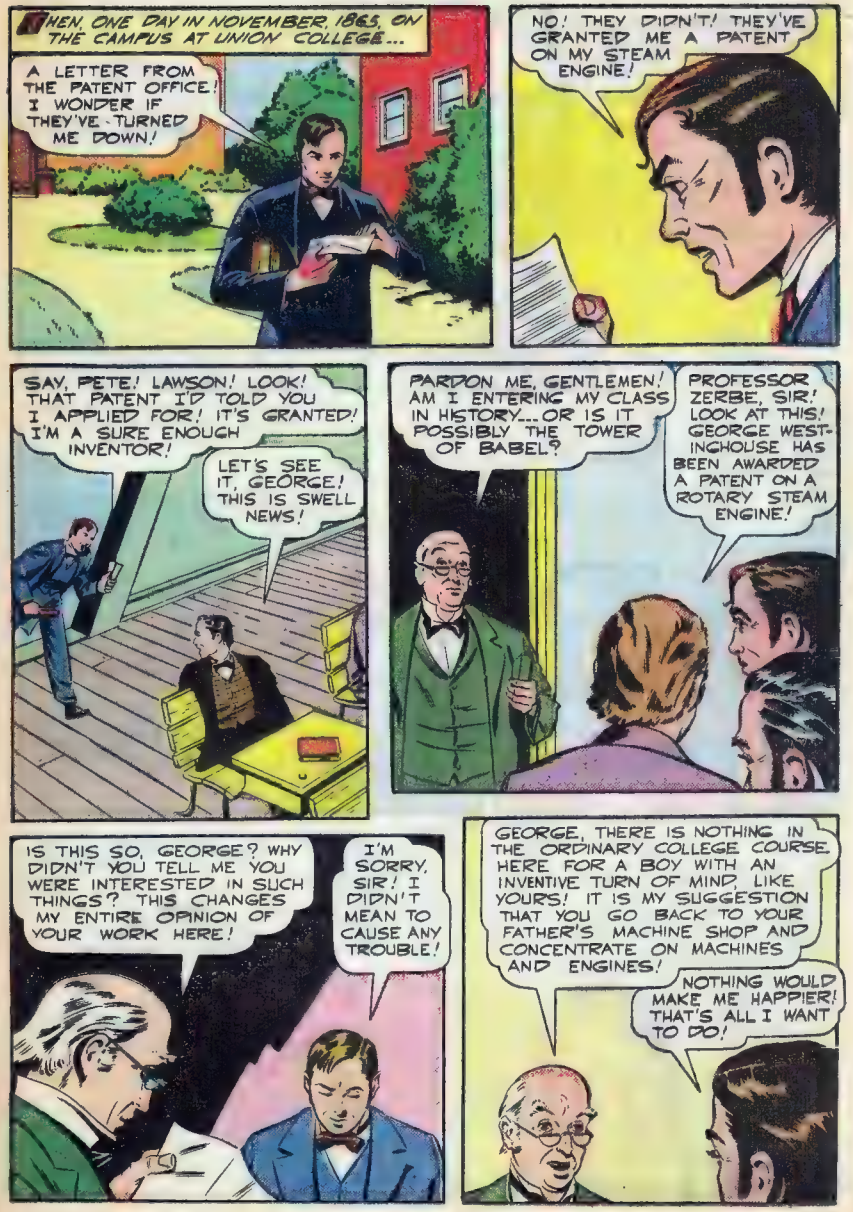
INVENTIVE WIZARD



Born in 1846, George Westinghouse averaged a new patent for his inventions on an average of one every 45 days for a period of 48 years--a total of 361 individual patents! Now, on the 100th anniversary of his birth, there is scarcely a person in the United States whose life and activities are not affected by the achievements of this man who was called "the world's greatest engineer"!




LOOK, FATHER! MY NEW STEAM ENGINE IS A SUCCESS! I'M GOING TO APPLY FOR A PATENT ON IT!
THAT ISN'T ALL YOU'RE GOING TO DO! YOU'RE ALREADY 19 YEARS OLD AND IT'S ABOUT TIME YOU SETTLED DOWN! I'M ENROLLING YOU IN UNION COLLEGE THIS FALL!


THEN, ONE DAY IN NOVEMBER, 1865, ON THE CAMPUS AT UNION COLLEGE...
A LETTER FROM THE PATENT OFFICE! I WONDER IF THEY'VE TURNED ME DOWN!
NO! THEY DIDN'T! THEY'VE GRANTED ME A PATENT ON MY STEAM ENGINE!
SAY, PETE! LAWSON! LOOK! THAT PATENT I'D TOLD YOU I APPLIED FOR! IT'S GRANTED! I'M A SURE ENOUGH INVENTOR!
LET'S SEE IT, GEORGE! THIS IS SWELL NEWS!
PARDON ME, GENTLEMEN! AM I ENTERING MY CLASS IN HISTORY...OR IS IT POSSIBLY THE TOWER OF BABEL?
PROFESSOR ZERBE, SIR! LOOK AT THIS! GEORGE WESTINGHOUSE HAS BEEN AWARDED A PATENT ON A ROTARY STEAM ENGINE!
IS THIS SO, GEORGE? WHY DIDN'T YOU TELL ME YOU WERE INTERESTED IN SUCH THINGS? THIS CHANGES MY ENTIRE OPINION OF YOUR WORK HERE!
I'M SORRY, SIR! I DIDN'T MEAN TO CAUSE ANY TROUBLE!
GEORGE, THERE IS NOTHING IN THE ORDINARY COLLEGE COURSE HERE FOR A BOY WITH AN INVENTIVE TURN OF MIND LIKE YOURS! IT IS MY SUGGESTION THAT YOU GO BACK TO YOUR FATHER'S MACHINE SHOP AND CONCENTRATE ON MACHINES AND ENGINES!
NOTHING WOULD MAKE ME HAPPIER! THAT'S ALL I WANT TO DO!

So after three months of college, Westinghouse returned to his father's machine shop in Schenectady. Then one day when he was returning on the railroad from Albany after a business trip....

WHAT'S THE MATTER? HOW COME WE'VE STOPPED?

A COUPLE OF FREIGHT CARS ON A TRAIN UP AHEAD JUMPED THE TRACK! WE HAVE TO WAIT UNTIL THEY GET 'EM BACK ON THE RAILS AGAIN!

THERE CERTAINLY SHOULD BE A BETTER WAY OF GETTING DERAILED CARS BACK ON THE TRACK THAN ***THAT!*** IMAGINE SPENDING HOURS AND HOURS JOCKEYING AND SHOVING CARS AROUND TO GET THEIR WHEELS BACK!

THAT'S JUST PLAIN SILLY! I CAN ALREADY SEE A BETTER WAY TO DO IT!

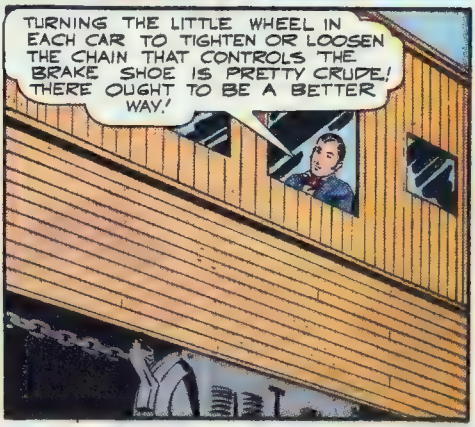
WHY NOT CLAMP SHORT STUBS OF RAILS AT AN ANGLE TO THE TRACKS AND FIT THEM UNDER THE DERAILED WHEELS? THEN, ALL THEY HAVE TO DO IS START THE ENGINE AND PULL THOSE CARS RIGHT BACK ONTO THE REGULAR RAILS!

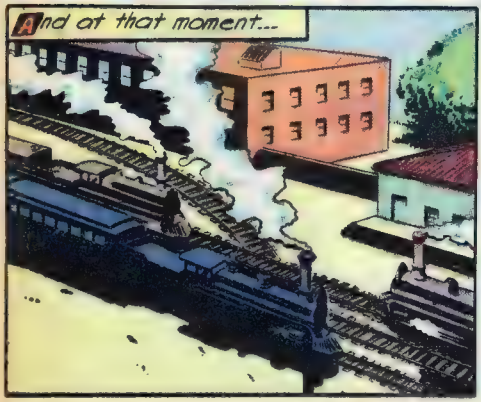
Westinghouse worked out and patented his second invention... and at the age of 20 formed his own company to make the "Car Replacer"!

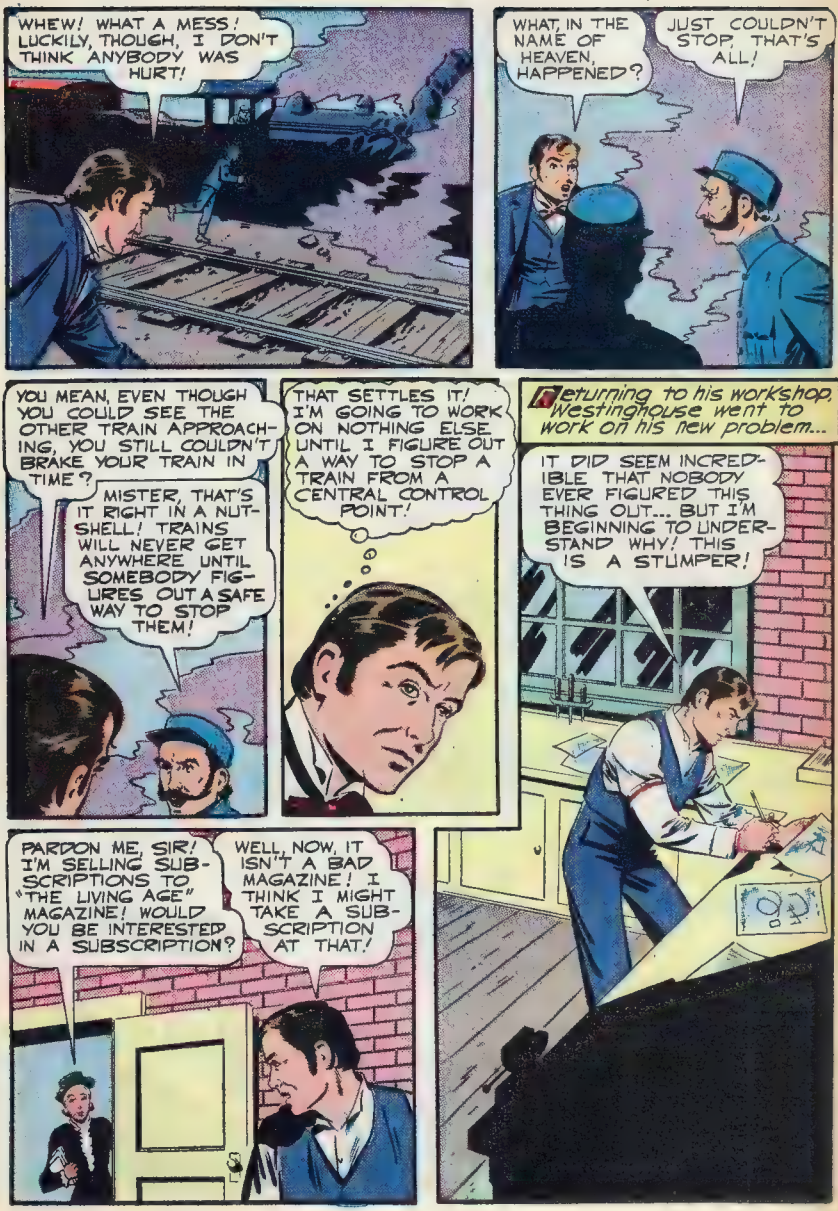
With his company in production, George Westinghouse became regular commutor between his plant in Troy and his home in Schenectady....

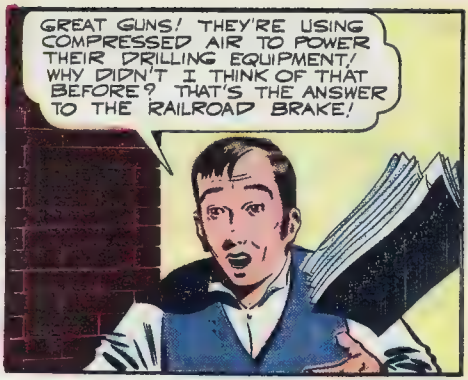
I DON'T KNOW WHY SOMEBODY DOESN'T INVENT A WAY TO STOP A TRAIN WHERE IT'S SUPPOSED TO STOP! THEY EITHER HALT SHORT OF THE STATION OR THEY GO PAST IT BY FIFTY YARDS!

IMAGINE HAVING A BRAKEMAN IN EACH CAR! AND ALL OF THEM HAVE TO WORK IN PERFECT UNISON IN ORDER TO MAKE ANY KIND OF A DECENT STOP!

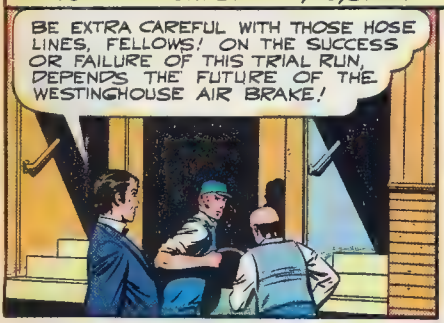

TURNING THE LITTLE WHEEL IN EACH CAR TO TIGHTEN OR LOOSEN THE CHAIN THAT CONTROLS THE BRAKE SHOE IS PRETTY CRUDE! THERE OUGHT TO BE A BETTER WAY!

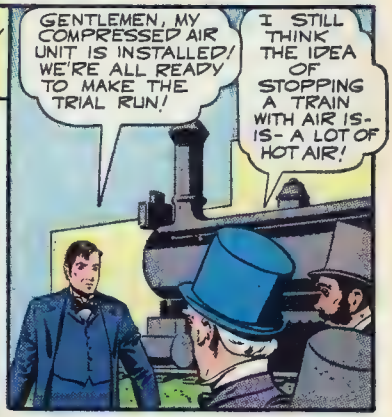


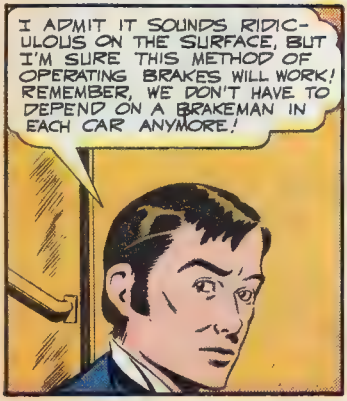

WHEW! WHAT A MESS! LUCKILY, THOUGH, I DON'T THINK ANYBODY WAS HURT!
WHAT, IN THE NAME OF HEAVEN, HAPPENED?
JUST COULDN'T STOP, THAT'S ALL!
YOU MEAN, EVEN THOUGH YOU COULD SEE THE OTHER TRAIN APPROACHING, YOU STILL COULDN'T BRAKE YOUR TRAIN IN TIME?
MISTER, THAT'S IT RIGHT IN A NUTSHELL! TRAINS WILL NEVER GET ANYWHERE UNTIL SOMEBODY FIGURES OUT A SAFE WAY TO STOP THEM!
THAT SETTLES IT! I'M GOING TO WORK ON NOTHING ELSE UNTIL I FIGURE OUT A WAY TO STOP A TRAIN FROM A CENTRAL CONTROL POINT!
Returning to his workshop, Westinghouse went to work on his new problem...
IT DID SEEM INCREDIBLE THAT NOBODY EVER FIGURED THIS THING OUT... BUT I'M BEGINNING TO UNDERSTAND WHY! THIS IS A STUMPER!
PARDON ME, SIR! I'M SELLING SUBSCRIPTIONS TO "THE LIVING AGE" MAGAZINE! WOULD YOU BE INTERESTED IN A SUBSCRIPTION?
WELL, NOW, IT ISN'T A BAD MAGAZINE! I THINK I MIGHT TAKE A SUBSCRIPTION AT THAT!

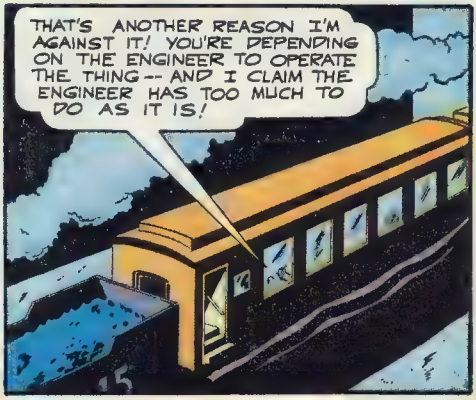

GREAT GUNS! THEY'RE USING COMPRESSED AIR TO POWER THEIR DRILLING EQUIPMENT! WHY DIDN'T I THINK OF THAT BEFORE? THAT'S THE ANSWER TO THE RAILROAD BRAKE!

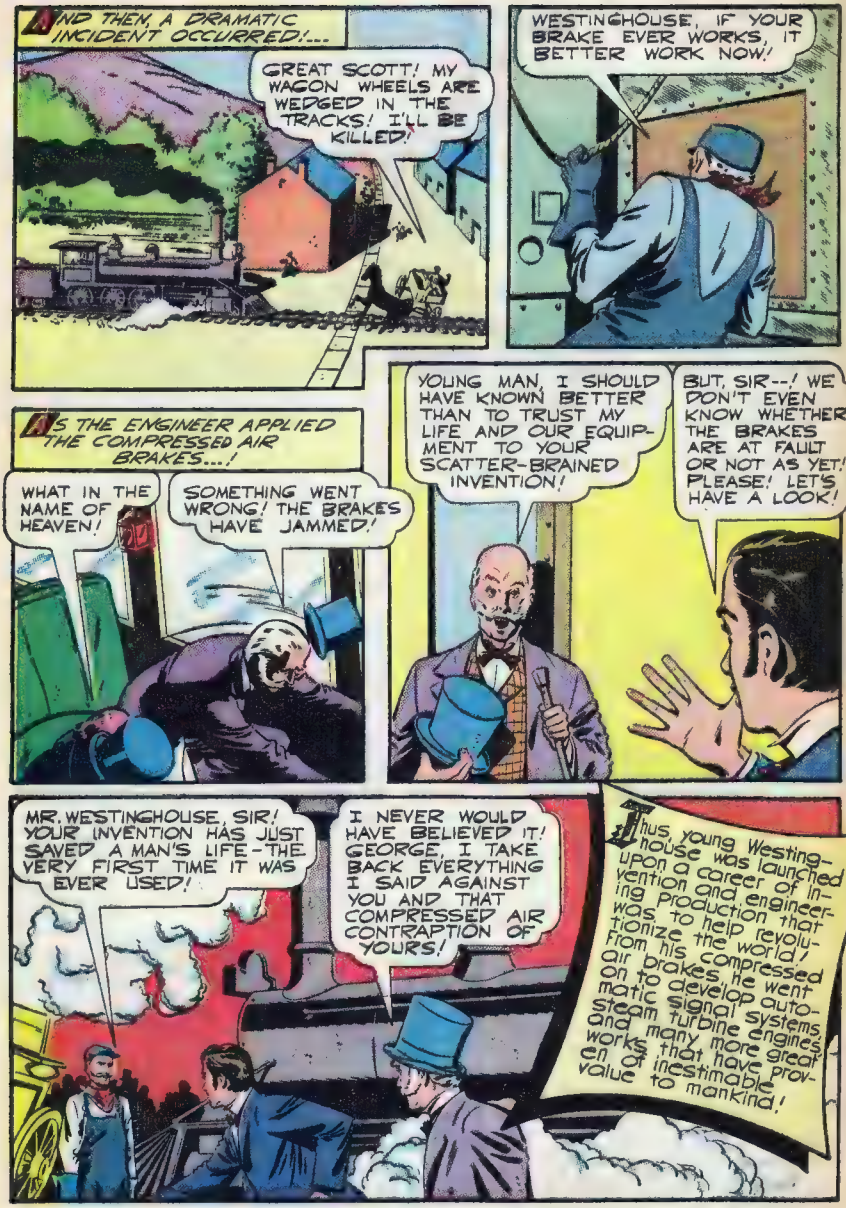
Working tirelessly with the idea of a compressed air unit to automatically apply and release the brakes on the wheels, George Westinghouse finally arrived at a satisfactory system!


BE EXTRA CAREFUL WITH THOSE HOSE LINES, FELLOWS! ON THE SUCCESS OR FAILURE OF THIS TRIAL RUN, DEPENDS THE FUTURE OF THE WESTINGHOUSE AIR BRAKE!


GENTLEMEN, MY COMPRESSED AIR UNIT IS INSTALLED! WE'RE ALL READY TO MAKE THE TRIAL RUN!
I STILL THINK THE IDEA OF STOPPING A TRAIN WITH AIR IS- IS- A LOT OF HOT AIR!


I ADMIT IT SOUNDS RIDICULOUS ON THE SURFACE, BUT I'M SURE THIS METHOD OF OPERATING BRAKES WILL WORK! REMEMBER, WE DON'T HAVE TO DEPEND ON A BRAKEMAN IN EACH CAR ANYMORE!


THAT'S ANOTHER REASON I'M AGAINST IT! YOU'RE DEPENDING ON THE ENGINEER TO OPERATE THE THING -- AND I CLAIM THE ENGINEER HAS TOO MUCH TO DO AS IT IS!

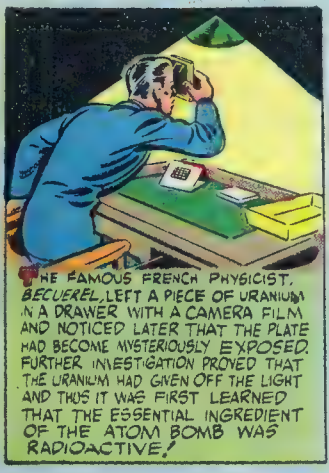

AND THEN, A DRAMATIC INCIDENT OCCURRED!...
GREAT SCOTT! MY WAGON WHEELS ARE WEDGED IN THE TRACKS! I'LL BE KILLED!
WESTINGHOUSE, IF YOUR BRAKE EVER WORKS, IT BETTER WORK NOW!
AS THE ENGINEER APPLIED THE COMPRESSED AIR BRAKES...!
WHAT IN THE NAME OF HEAVEN!
SOMETHING WENT WRONG! THE BRAKES HAVE JAMMED!
YOUNG MAN, I SHOULD HAVE KNOWN BETTER THAN TO TRUST MY LIFE AND OUR EQUIPMENT TO YOUR SCATTER-BRAINED INVENTION!
BUT, SIR--! WE DON'T EVEN KNOW WHETHER THE BRAKES ARE AT FAULT OR NOT AS YET! PLEASE! LET'S HAVE A LOOK!
MR. WESTINGHOUSE, SIR! YOUR INVENTION HAS JUST SAVED A MAN'S LIFE - THE VERY FIRST TIME IT WAS EVER USED!
I NEVER WOULD HAVE BELIEVED IT! GEORGE, I TAKE BACK EVERYTHING I SAID AGAINST YOU AND THAT COMPRESSED AIR CONTRAPTION OF YOURS!
Thus, young Westinghouse was launched upon a career of invention and engineering production that was to help revolutionize the world! From his compressed air brakes, he went on to develop automatic signal systems, steam turbine engines and many more great works that have proven of inestimable value to mankind!

SCIENTIFIC SERENDIPITIES

A "SERRENDIPITY" IS A DISCOVERY MADE BY ACCIDENT WHILE THE DISCOVERER WAS IN SEARCH OF SOMETHING ENTIRELY DIFFERENT. ON THIS PAGE ARE SOME INTERESTING EXAMPLES.

IN 1856, A YOUNG CHEMIST NAMED *WILLIAM HENRY PERKINS*, WHO WAS ENDEAVORING TO EXTRACT QUININE FROM COAL TAR, POURED SOME ALCOHOL INTO A BEAKER OF TAR TO CLEAN IT --- AND DISCOVERED HE HAD FOUND THE SECRET OF THE FIRST ANALINE DYES!

AN ENGLISH SCIENTIST --- *DOCTOR FALLBERG* — BREWED HIMSELF A CUP OF TEA AFTER A DAY'S WORK IN HIS LABORATORY. NOTICING THAT THE TEA WAS MUCH TOO SWEET, HE DISCOVERED THAT THE MATERIAL HE HAD BEEN WORKING WITH HAD REMAINED ON HIS FINGERS AND SWEETENED THE TEA. TODAY WE KNOW THIS SUBSTANCE AS SACHARINE!



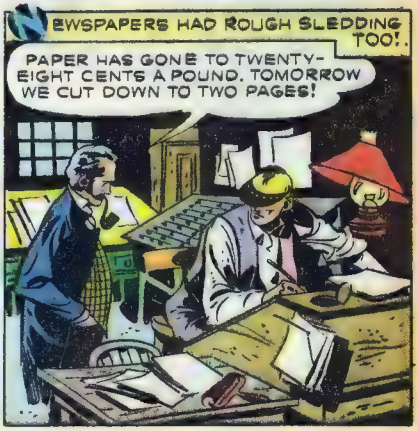
THE FAMOUS FRENCH PHYSICIST, *BECUEREL*, LEFT A PIECE OF URANIUM IN A DRAWER WITH A CAMERA FILM AND NOTICED LATER THAT THE PLATE HAD BECOME MYSTERIOUSLY EXPOSED. FURTHER INVESTIGATION PROVED THAT THE URANIUM HAD GIVEN OFF THE LIGHT AND THUS IT WAS FIRST LEARNED THAT THE ESSENTIAL INGREDIENT OF THE ATOM BOMB WAS RADIOACTIVE!

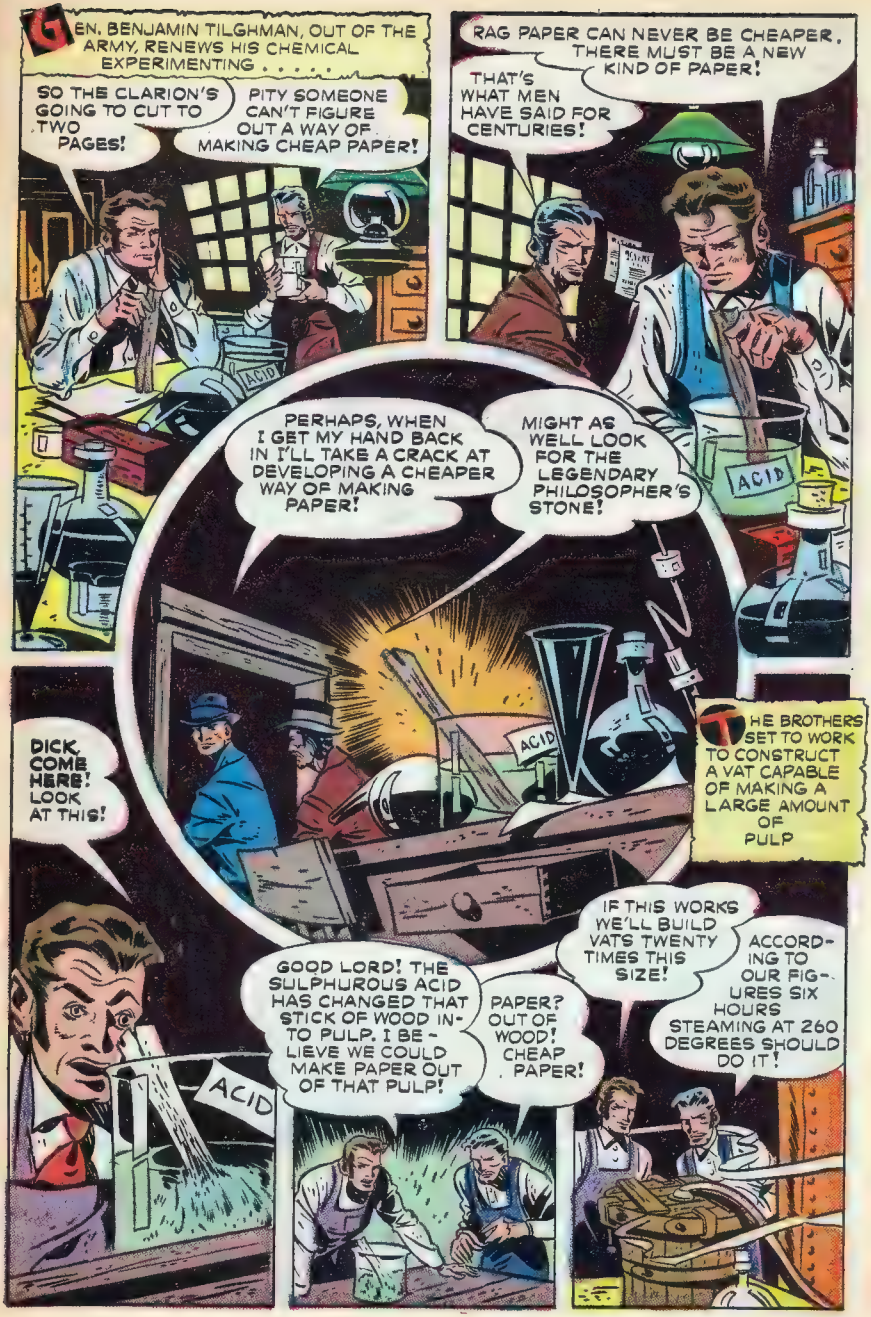
BEFORE 1746, ALL PAPER WAS SLIGHTLY YELLOWISH IN COLOR. BUT A MRS. BUTTONSHAW, WALKING THROUGH HER HUSBAND'S PAPER FACTORY ACCIDENTALLY DROPPED A PACKAGE OF BLUING FROM HER SHOPPING BAG INTO A VAT OF PAPER. THE BLUING PRODUCED THE FIRST REALLY WHITE PAPER!!

THE STICK THAT dissolved

DAILY REVIEW
2,000,000 CIRCULATION
NEWS T
READ
READ ALL THE NEWS NOW
After the Civil War, just as today, there was a shortage of goods and prices skyrocketed. Paper, made only from rags in those days, sold for as much as twenty-eight cents a pound. Then Gen. Benjamin Tilghman, quite by accident, hit upon the secret of making cheap paper from wood pulp...

When the Civil War ended...
But I can't carry those things home unwrapped!
Sorry madam, but paper is too dear to use for wrapping groceries!

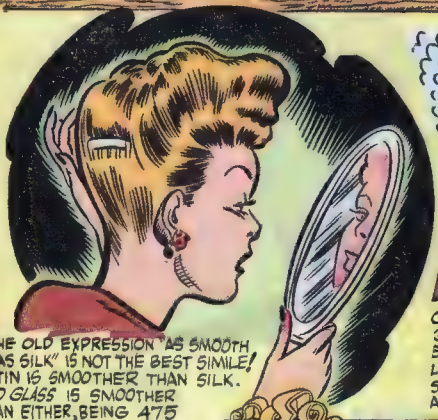



GEN. BENJAMIN TILGHMAN, OUT OF THE ARMY, RENEWS HIS CHEMICAL EXPERIMENTING . . . . . .
SO THE CLARION'S GOING TO CUT TO TWO PAGES!
PITY SOMEONE CAN'T FIGURE OUT A WAY OF MAKING CHEAP PAPER!
ACID
RAG PAPER CAN NEVER BE CHEAPER. THERE MUST BE A NEW KIND OF PAPER!
THAT'S WHAT MEN HAVE SAID FOR CENTURIES!
ACID
PERHAPS, WHEN I GET MY HAND BACK IN I'LL TAKE A CRACK AT DEVELOPING A CHEAPER WAY OF MAKING PAPER!
MIGHT AS WELL LOOK FOR THE LEGENDARY PHILOSOPHER'S STONE!
ACID
THE BROTHERS SET TO WORK TO CONSTRUCT A VAT CAPABLE OF MAKING A LARGE AMOUNT OF PULP
DICK, COME HERE! LOOK AT THIS!
ACID
GOOD LORD! THE SULPHUROUS ACID HAS CHANGED THAT STICK OF WOOD INTO PULP. I BELIEVE WE COULD MAKE PAPER OUT OF THAT PULP!
PAPER? OUT OF WOOD! CHEAP PAPER!
IF THIS WORKS WE'LL BUILD VATS TWENTY TIMES THIS SIZE!
ACCORDING TO OUR FIGURES SIX HOURS STEAMING AT 260 DEGREES SHOULD DO IT!

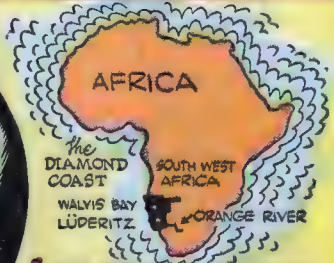
SIX HOURS LATER . . . . . .
WE'VE GOT IT! WE CAN FLOOD THE MARKET WITH PAPER MADE FROM WOOD!
NOT YET, BEN. THE ACID HAS EATEN THE LEAD LINING AWAY!
THE TILGHMANS TRIED ONE MATERIAL AFTER ANOTHER . . . . .
THE FINEST STEEL AND THE ACID ATE IT AWAY IN TWO HOURS!
THAT'S TWENTY-SEVEN ATTEMPTS AND NOTHING YET THAT CAN RESIST THE ACID!
YEARS LATER THE PROBLEM WAS SOLVED
THAT DOES IT. THE SULPHUROUS ACID CAN'T TOUCH CONCRETE!
A FEW YEARS FROM NOW WE'LL BE CONVERTING A WHOLE FOREST INTO PAPER IN A DAY!
THE PREDICTION CAME TRUE . . .
BY GAR ETIENNE! IF THIS JAM SHE NO BREAK SOON PEOPLE HAVE TO GO WITHOUT NEWSPAPERS!
HO! THESE LOGS MAKE PAPER ENOUGH FOR ONLY ONE DAY!
CHEAP PAPER, PLUS HIGH-SPEED PRESSES BRING READING MATTER TO THE POOREST MAN!
INCREASE THE FIRST EDITION RUN ANOTHER 50,000.
DRAT IT! THAT'LL PUT ME THIRTY MINUTES LATER FOR SUPPER AGAIN!

Science ODDS AND ENDS

FOR SOME INEXPLICABLE REASON, ALL MALE WHITE CATS HAVING BLUE EYES ARE ALWAYS *DEAF!!*



THE OLD EXPRESSION "AS SMOOTH AS SILK" IS NOT THE BEST SIMILE! SATIN IS SMOOTHER THAN SILK. AND *GLASS* IS SMOOTHER THAN EITHER, BEING 475 TIMES SMOOTHER THAN SILK AND 300 TIMES SMOOTHER THAN SATIN.



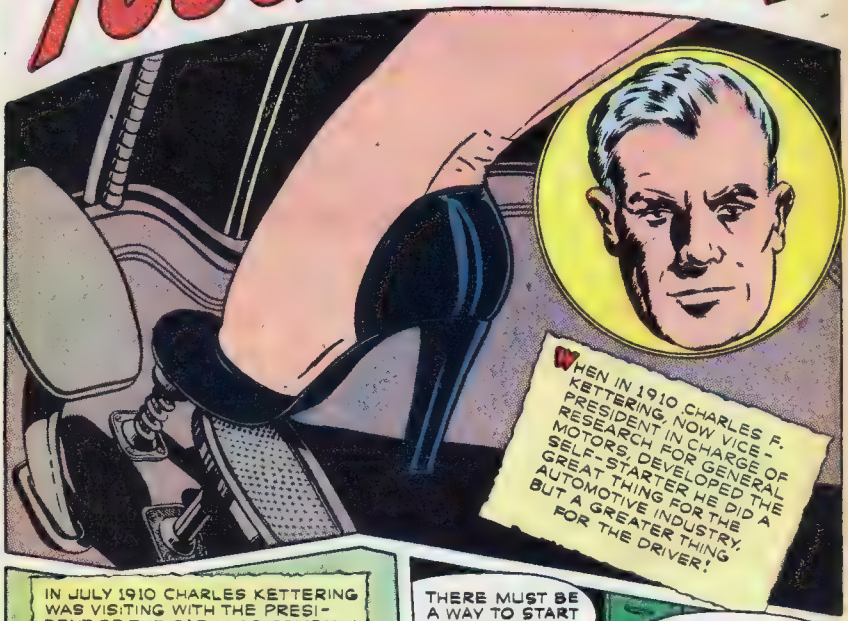
A STRIP OF BEACH IN SOUTHWEST AFRICA KNOWN AS "THE DIAMOND COAST" IS LITERALLY STREWN WITH LOOSE GEMS THAT COULD BE PICKED UP EASILY.. BUT FOR CONSTANT SEA, AIR, AND LAND PATROLS OF THE GOVERNMENT OF SOUTH AFRICA. TO BE CAUGHT THERE MEANS A SWIFT TRIAL AND A STIFF SENTENCE.

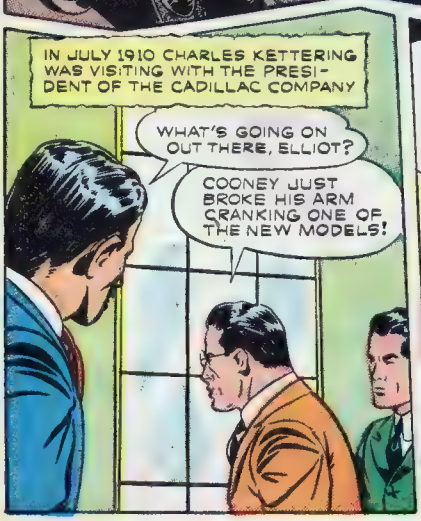
IT IS A SCIENTIFIC FACT THAT IT IS EASIER TO SMILE THAN TO FROWN! A SMILE REQUIRES THE USE OF ONLY 26 FACIAL MUSCLES ... BUT A FROWN BRINGS 62 MUSCLES INTO PLAY.

IN RELATION TO THEIR SIZE, ALLIGATORS AND CROCODILES HAVE THE SMALLEST BRAINS OF ALL OTHER ANIMALS.

SEYMOUR

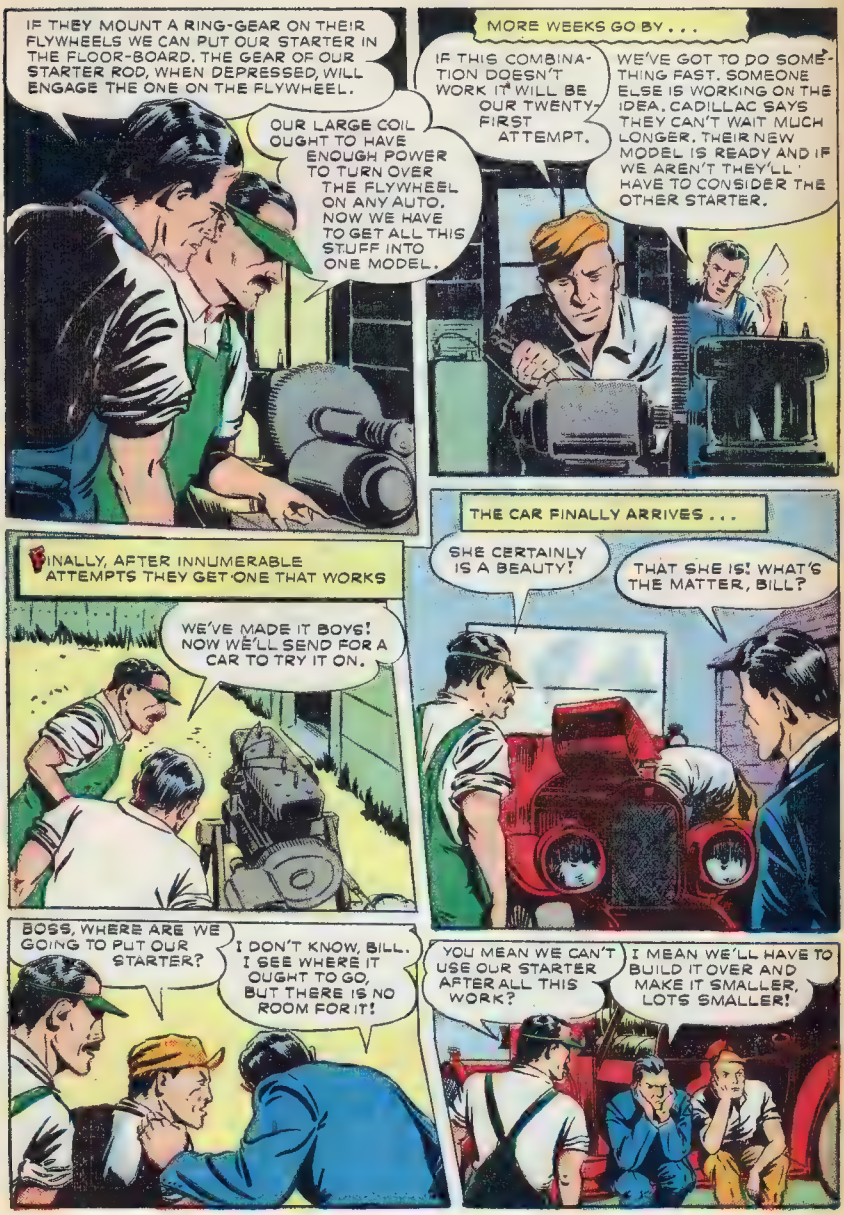
AT THE TOUCH OF A BUTTON


WHEN IN 1910 CHARLES F. KETTERING, NOW VICE-PRESIDENT IN CHARGE OF RESEARCH FOR GENERAL MOTORS, DEVELOPED THE SELF-STARTER HE DID A GREAT THING FOR THE AUTOMOTIVE INDUSTRY, BUT A GREATER THING FOR THE DRIVER!


IN JULY 1910 CHARLES KETTERING WAS VISITING WITH THE PRESIDENT OF THE CADILLAC COMPANY
WHAT'S GOING ON OUT THERE, ELLIOT?
COONEY JUST BROKE HIS ARM CRANKING ONE OF THE NEW MODELS!

THERE MUST BE A WAY TO START CARS BY ELECTRICITY. STARTING A CAR THESE DAYS IS A MENACE!
YOU'RE RIGHT. THIS IS THE FIFTH ACCIDENT THIS WEEK. KETTERING, DEVELOP AN ELECTRIC STARTER AND I'LL INSTALL ONE ON EVERY NEW CADILLAC MADE!

KETTERING RETURNS TO DAYTON AND THE BARN HE CALLS A FACTORY
BOYS, WE'VE GOT A NEW PROBLEM, STARTING A CAR BY ELECTRICITY! WE'LL START EXPERIMENTS IMMEDIATELY! IT SHOULD WORK SOMETHING LIKE THE STARTER WE DEVELOPED FOR THE CASH REGISTER!
THAT WAS A LITTLE ELECTRIC MOTOR OPERATED BY A BUTTON!
I'VE FIGURED OUT THAT WE'LL HAVE TO USE A BATTERY AND GENERATOR TO GET CURRENT FOR A STARTER. DRIVING THE CAR WILL CHARGE THE BATTERY. OUR FIRST PROBLEM IS HOW TO KEEP THE BATTERY FROM OVERCHARGING!
A FEW WEEKS LATER . . .
THERE GOES ANOTHER COIL!
I GUESS WE'LL HAVE TO TRY AGAIN! PUT IT DOWN IN THE EXPERIMENT RECORDS. WE SEEM TO BE GETTING NOWHERE FAST!
JUST GOT A LETTER FROM CADILLAC WANTING TO KNOW HOW SOON WE CAN SEND A STARTER! WISH I KNEW MYSELF! I THINK I'VE SOLVED THE OVERCHARGE PROBLEM THOUGH! COME OVER TO THE BENCH!
EXPERIMENT TURNS TO THE STARTER ITSELF
WE'LL USE TWO COILS! ONE WILL CARRY A LOT OF CURRENT TO CRANK THE ENGINE. THE OTHER JUST ENOUGH TO CHARGE THE BATTERIES. IF WE WIND THEM IN REVERSE ONE WILL BUCK THE OTHER!
... AND NO MATTER HOW FAST YOU DRIVE THE GENERATOR CAN'T OVERCHARGE THE BATTERY!
ONE MORE TOOTH AND IT WILL BE READY. MAYBE THIS COMBINATION WILL WORK!
THE PRINCIPLE CERTAINLY SEEMS SOUND


IF THEY MOUNT A RING-GEAR ON THEIR FLYWHEELS WE CAN PUT OUR STARTER IN THE FLOOR-BOARD. THE GEAR OF OUR STARTER ROD, WHEN DEPRESSED, WILL ENGAGE THE ONE ON THE FLYWHEEL.
OUR LARGE COIL OUGHT TO HAVE ENOUGH POWER TO TURN OVER THE FLYWHEEL ON ANY AUTO. NOW WE HAVE TO GET ALL THIS STUFF INTO ONE MODEL.
MORE WEEKS GO BY . . .
IF THIS COMBINATION DOESN'T WORK IT WILL BE OUR TWENTY-FIRST ATTEMPT.
WE'VE GOT TO DO SOMETHING FAST. SOMEONE ELSE IS WORKING ON THE IDEA. CADILLAC SAYS THEY CAN'T WAIT MUCH LONGER. THEIR NEW MODEL IS READY AND IF WE AREN'T THEY'LL HAVE TO CONSIDER THE OTHER STARTER.
FINALLY, AFTER INNUMERABLE ATTEMPTS THEY GET ONE THAT WORKS
WE'VE MADE IT BOYS! NOW WE'LL SEND FOR A CAR TO TRY IT ON.
THE CAR FINALLY ARRIVES . . .
SHE CERTAINLY IS A BEAUTY!
THAT SHE IS! WHAT'S THE MATTER, BILL?
BOSS, WHERE ARE WE GOING TO PUT OUR STARTER?
I DON'T KNOW, BILL. I SEE WHERE IT OUGHT TO GO, BUT THERE IS NO ROOM FOR IT!
YOU MEAN WE CAN'T USE OUR STARTER AFTER ALL THIS WORK?
I MEAN WE'LL HAVE TO BUILD IT OVER AND MAKE IT SMALLER, LOTS SMALLER!

BACK TO THE BARN TO START AGAIN . . . .
THERE IS JUST ONE WEEK LEFT. NEXT SATURDAY THE CAR GOES BACK TO THE FACTORY!
AT LEAST, WITH THE CAR, WE KNOW WHAT WE'RE AIMING FOR!
FOUR DAYS LATER . . .
I HOPE THIS FINISHES THE WORK!
IT BETTER. THERE ARE ONLY THREE DAYS LEFT!
IT'S STILL TOO BIG!
WELL, WE'LL MAKE ANOTHER. AND THIS TIME IT WILL FIT!
TIRELESSLY, STUBBORNLY, AROUND THE CLOCK THEY WORK UNTIL THE VERY LAST DAY . . . .
TAKE THIS COFFEE BOSS. IT'LL KEEP YOU AWAKE. I'VE BEEN LIVING ON IT!
WE'LL BE READY TO TRY AGAIN IN ANOTHER FIFTEEN MINUTES!
STARTER BUTTON
FLOORBOARD
STARTER SWITCH
STARTER
FLYWHEEL
RELEASE SPRING
BATTERY
GROUND
GENERATOR
AS SOON AS WE CHECK IT WE'LL GIVE HER A TRY!
IT JUST CAN'T GO WRONG THIS TIME!

IT DOESN'T WORK!
TRY IT AGAIN!
WHAT ARE WE GOING TO DO NOW?
I'M SO TIRED I CAN'T TELL ONE WIRE FROM ANOTHER!
WE CAN'T GIVE UP NOW! BOB, GO OVER AND GET BILL CRYST. HE'S HELPED US ENOUGH TO KNOW WHAT TO LOOK FOR. MAYBE HE'LL FIND IT!
LITTLE LATER . . . .
IF THEY DON'T GET HERE SOON WE MIGHT AS WELL GIVE UP!
HERE THEY COME, NOW. IF ONLY HE CAN FIND THE TROUBLE!
I THINK THIS OUGHT TO DO IT, MR. KETTERING! WILL YOU TRY IT NOW?
IT WORKS! IT WORKS! SHE TURNS OVER!
YOU FELLOWS MUST HAVE BEEN SO WORN OUT YOU COULDN'T CHECK YOUR CONNECTIONS. YOU HAD A SHORT AND DIDN'T KNOW IT!
A FEW WEEKS LATER CADILLAC GAVE KETTERING A TWO MILLION DOLLAR ORDER. OTHER MANUFACTURERS QUICKLY FOLLOWED CADILLAC'S LEAD AND THE DIFFICULT, DANGEROUS CRANK WAS REPLACED BY THE STARTER THAT WORKED AT THE TOUCH OF A BUTTON!
WHY DON'T YOU GET RID OF THAT PIECE OF JUNK AND GET A NEW CAR WITH A SELF-STARTER?
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MAYBE WE BETTER GO INSIDE. HERE COMES THAT BIG GORILLA, GUS!
'FRAID HE'LL BITE YOU LITTLE BOY?
WELL, "SKINNY MAC"! RUN ALONG NOW--ALICE AND I ARE STEPPING OUT!
BUT ALICE HAS A DATE WITH ME!
MAYBE SHE DID HAVE ONE BUT NOT NOW!--YOU WEAKLING!
SORRY MAC--BUT I CAN'T HELP IT IF YOU'RE SO HELPLESS!
"YOU WEAKLING" HE CALLED ME! I'LL MAKE HIM EAT THOSE TWO WORDS! I'LL SEND FOR CHARLES ATLAS' FREE BOOK AND FIND OUT HOW TO BE A REAL HE-MAN!
LATER
BOY! ATLAS REALLY BUILDS MEN FAST--JUST LOOK AT THOSE MUSCLES! NOW WATCH ME SHOW UP THAT BIG "SHOW OFF."
WHAT! YOU HERE AGAIN? SCRAM! BEFORE I-
OH YEAH?
WHAM
OH MAC, YOU'RE WONDERFUL! WHAT A HE-MAN YOU GOT TO BE!

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